MANITOBA

ANNUAL REPORT

1982-83

The Department of
Natural Resources

84- 3360 /

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To Her Honour,
The Honourable Pearl McGonigal
Lieutenant Governor of the
Province of Manitoba

Your Honour:

I am pleased to present to you the fifty-second annual report of the Department of Natural Resources, recording the activities of the Department for the fiscal year ending March 31, 1983.

Yours truly,

Al Mackling
Minister

The Honourable Al Mackling

Minister, Department of Natural Resources

Sir:

I am forwarding the 1982/83 Department of Natural Resources annual report with the satisfaction that it reflects solid achievement in the face of accelerating difficulties in meeting the demands upon the resources for which the Department has management responsibility. I draw your attention to a few of the many activities recorded in the report which, as you are aware, attempt to meet the challenges of resource management in the 80's. These require frequent exposure to the public if we are to find an understanding of the balance we are seeking.

Nowhere is a balance more necessary than in the competition between agriculture and wildlife. The administration of agricultural use of wildlife management areas is now the responsibility of the Wildlife Branch. Plans for the establishment of more wildlife management areas are being made. Other programs are in place to preserve critical wildlife habitat. For example, landowners may donate land to the Province for wildlife habitat. Under this program, the John McPhail Wildlife Refuge was bequeathed to the Province during the year. Extensive land exchange programs have been implemented where local government districts may exchange land suited to wildlife for an equal value of Crown land suitable for agriculture. Under programs conducted by the Conservation Districts in Manitoba, unused road allowances are being preserved for wildlife through the Conservation Corridor Program. The Wildlands Program allows individuals to set aside land for wildlife as well.

The Department is dedicated to seeking a solution to the issue of nighthunting, approaching the subject from the perspective of the damage involved and the ease with which the ungulate resource is depleted using this mode. Like illegal barter of game and fish, the problem cannot be solved solely through enforcement and the courts. Consequently, 1982 saw an intensification of communication and involvement of users in resource management decisions. I believe such efforts must be continued if we are to find common ground between the rights of native people and the capacity of the resource, and between the duties of our natural resource officers and the responsibility which can be expected to be adopted by an informed hunting and fishing public.

Steps toward satisfying the steady demand for more recreation space were taken during the year. Master plans for several provincial parks were in progress. For other parks, interim management guidelines were implemented until master plans can be developed. A new parks system plan designed to meet a balanced approach to the recreational needs of the public was being prepared. In such a system for example, there will be parks and areas set aside for wilderness, refuges and historic places as well as facilities for vigorous or intensive activities.

The development of industry and agriculture is placing an increasing demand on water resources. Many farmers are venturing into irrigation as a means of expanding production. Groundwater is being drawn from the aquifers of this province at an ever-increasing rate. The Water Resources Branch has established aquifer management areas in locations of dense demand, and the effect of increased use of groundwater is being monitored.

Some areas of the province have the necessary soils and climate for high agricultural yield, but lack certainty in water supply. The problem was one of those being investigated under the Canada/Manitoba Subsidiary Agreement on Water Development. Similarly, the Department was studying methods of increasing value-added crops production through more intensive water management at the local level.

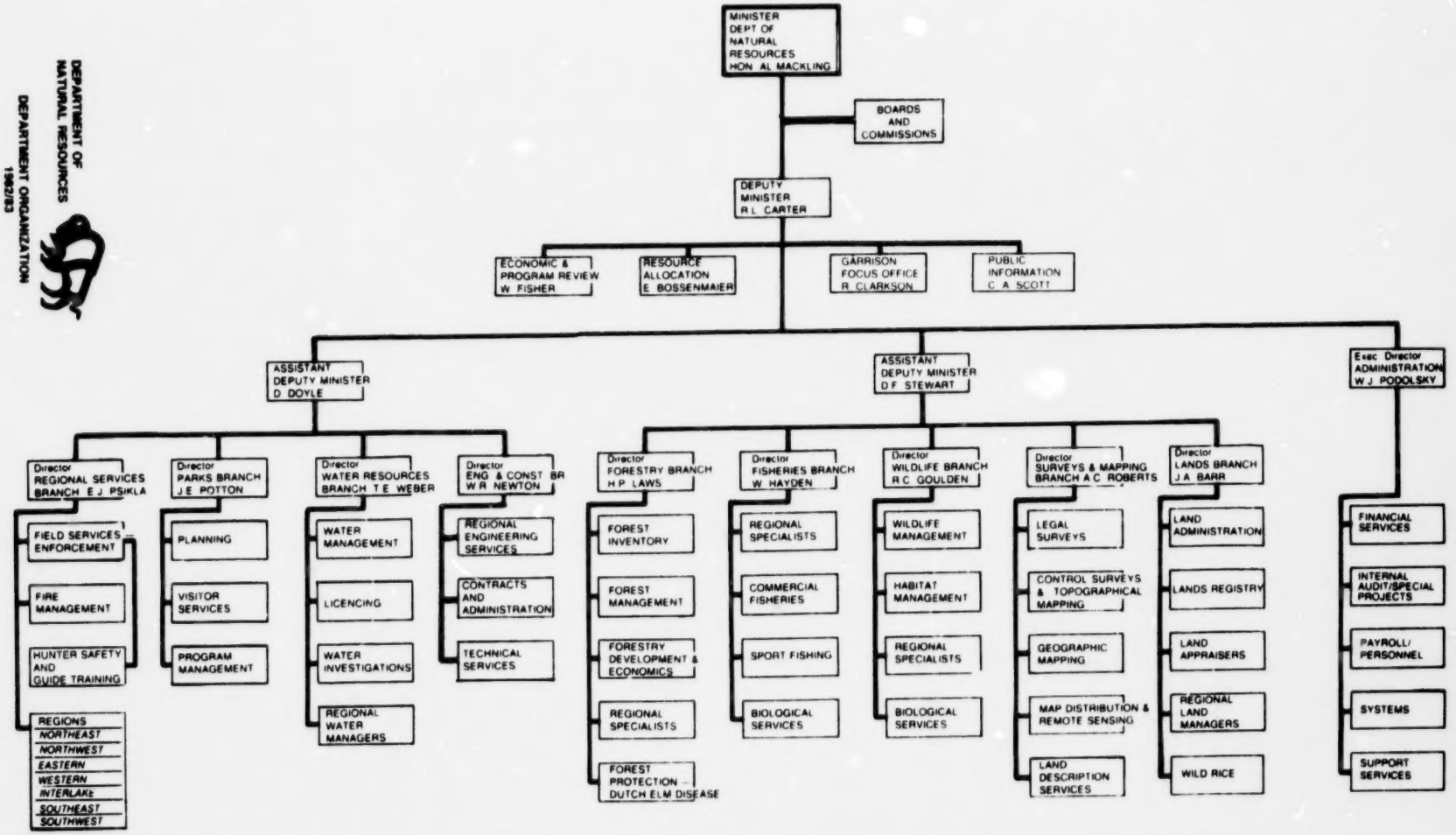
A new Water Rights Act was under development for introduction in the 1983/84 fiscal year, reflecting the need for a legislative instrument to provide tighter management of the water resource as demand approaches available supply in some parts of Manitoba.

The Department, in an effort to meet timber requirements, expanded its forest nursery capacity. The new Clearwater Lake Forest Nursery near The Pas will increase the Department's annual production of tree seedlings for reforestation programs by four million when it is completed in 1987. The first seedlings from the new nursery will be planted in the spring of 1984. The nursery will allow for increased reforestation efforts in northern and western areas of the province. The production capacity of the Pineland Forest Nursery at Hadashville was increased by more than 400,000 seedlings with the addition of two more greenhouses in 1982/83.

I would not wish you to feel that the parts of the Department to which I have not referred are devoid of challenges or achievement. In a sense, the omissions are affordable because the dedication of staff to the management of natural resources in the province sustained its usual high level in 1982/83.

Yours sincerely,

R. L. Carter


DEPARTMENT OF NATURAL RESOURCES
DEPARTMENT ORGANIZATION 1982/83
MINISTER DEPT OF NATURAL RESOURCES HON AL MACKLING
BOARDS AND COMMISSIONS
DEPUTY MINISTER R L CARTER
ECONOMIC & PROGRAM REVIEW W FISHER
RESOURCE ALLOCATION E BOSSENMAIER
GARRISON FOCUS OFFICE R CLARKSON
PUBLIC INFORMATION C A SCOTT
ASSISTANT DEPUTY MINISTER D DOYLE
ASSISTANT DEPUTY MINISTER D F STEWART
Exec Director ADMINISTRATION W J PODOLSKY
Director REGIONAL SERVICES BRANCH E J PSIKLA
FIELD SERVICES ENFORCEMENT
FIRE MANAGEMENT
HUNTER SAFETY AND GUIDE TRAINING
REGIONS
NORTHEAST
NORTHWEST
EASTERN
WESTERN
INTERLAKE
SOUTHEAST
SOUTHWEST
Director PARKS BRANCH J E POTTON
PLANNING
VISITOR SERVICES
PROGRAM MANAGEMENT
Director WATER RESOURCES BRANCH T E WEBER
WATER MANAGEMENT
LICENCING
WATER INVESTIGATIONS
REGIONAL WATER MANAGERS
Director ENG & CONST BR W R NEWTON
REGIONAL ENGINEERING SERVICES
CONTRACTS AND ADMINISTRATION
TECHNICAL SERVICES
Director FORESTRY BRANCH H P LAWS
FOREST INVENTORY
FOREST MANAGEMENT
FORESTRY DEVELOPMENT & ECONOMICS
REGIONAL SPECIALISTS
FOREST PROTECTION - DUTCH ELM DISEASE
Director FISHERIES BRANCH W HAYDEN
REGIONAL SPECIALISTS
COMMERCIAL FISHERIES
SPORT FISHING
BIOLOGICAL SERVICES
Director WILDLIFE BRANCH R C GOULDEN
WILDLIFE MANAGEMENT
HABITAT MANAGEMENT
REGIONAL SPECIALISTS
BIOLOGICAL SERVICES
Director SURVEYS & MAPPING BRANCH A C ROBERTS
LEGAL SURVEYS
CONTROL SURVEYS & TOPOGRAPHICAL MAPPING
GEOGRAPHIC MAPPING
MAP DISTRIBUTION & REMOTE SENSING
LAND DESCRIPTION SERVICES
Director LANDS BRANCH J A BARR
LAND ADMINISTRATION
LANDS REGISTRY
LAND APPRAISERS
REGIONAL LAND MANAGERS
WILD RICE
FINANCIAL SERVICES
INTERNAL AUDIT/SPECIAL PROJECTS
PAYROLL/ PERSONNEL
SYSTEMS
SUPPORT SERVICES

Department of Natural Resources

Summary of Expenditures and Revenues

for the period ending March 31, 1983

	1982/83 Actuals	
Expenditures		
Executive Administration	$560,400.00	
Administrative Services	2,680,000.00	
Resources Executive Administration	775,700.00	
Water Resources	13,620,000.00	
Parks	15,250,900.00	
Lands	1,847,700.00	
Forestry	8,274,600.00	
Fisheries	3,503,200.00	
Wildlife	4,224,400.00	
Surveys and Mapping	3,153,900.00	
Engineering and Construction	6,442,200.00	
Regional Services	18,501,300.00	
Total Expenditures — 1982/83		$78,834,300.00
Revenues		
Fisheries	$1,431,600.00	
Forestry	1,814,700.00	
Lands	2,737,400.00	
Municipalities — Shared Cost Receipts	18,500.00	
Parks	3,644,800.00	
Water Resources	11,714,400.00	
Wildlife	1,981,800.00	
Sundry	1,032,600.00	
Sale of Government Assets	44,300.00	
Government of Canada — Shared Cost Receipts	1,579,800.00	
Total Revenues — 1982/83		$25,999,900.00

Administrative Services Division

Administrative Services Division

Responsibilities:

Provides administrative and professional support to the Department, ensures on behalf of the Deputy Minister and the Minister that administrative policies, procedures and directives are followed.

Operational Support

The Operational Support Section provided a support service to the Department during the 1982/83 fiscal year.

The equipment depot and inventory system were amalgamated and located at 1680 Church Avenue. This section saw the newly instituted computerized inventory system complete its first year of operation. Also, the manual inventory "Tub" system was implemented at Grand Beach, Hecla and the Fisheries Branch head office.

The Library Section continued to maintain basic library services to the Department from Westrow Mall and satellite locations at 280 Smith Street and 1577 Dublin Avenue. Holdings include approximately 300 periodicals and over 23,500 books.

Financial Services

The Financial Services Section coordinated the preparation of Department revenue and expenditure estimates. It organized revenue collection and controlled and processed Department accounts payable and provided advice to all branches on financial aspects of their operations.

The distribution and sales of wildlife and fishing licences are organized by this section. It also develops and implements financial policy, systems and procedures, and provides financial information and direction to Department managers, other government departments and central agencies.

Personnel Services

Responsibility for coordinating the implementation of the French Language Services Program in the Department was assigned to the Personnel Services Branch. Studies were initiated to assess the present capability within the Department to deliver services in the French language and to determine what services should be made available in both official languages. Preparation of a French Language Services policy for the Department also began during the year.

The Department's Performance Review and Development Program was reissued during the year with minimal change, the prime intent being to give renewed emphasis to the importance of this program toward maintaining good personnel relations through improved supervisor/employee communication.

After a period of dormancy, the Workplace Safety and Health Program is once again operational with committees established in all regions to consider safety concerns. A rules booklet is being prepared and will be distributed to all staff. Training programs are being prepared for a variety of safety concerns.

During the year, 227 employees participated in training programs arranged by the Branch. These programs were aimed at the development of skills utilized each day by staff within the Department of Natural Resources.

Systems Services

The Systems Services Section continued to provide the required technical expertise to branches in their efforts to improve their program delivery by acquiring automated equipment. As part of an ongoing program to introduce office automation benefits to the Department, word processors were obtained for use by the Wildlife and Fisheries branches and Administrative Services. As well, the Section assisted the Fisheries Branch in acquiring a microcomputer and provided Branch management with a proposal for systems to be implemented. The Surveys and Mapping Branch was assisted in its efforts to acquire a minicomputer.

During the course of the year, several areas of the Department were identified where automated systems would improve their efficiency and effectiveness. The Section established a system to automate the record-keeping function of the signing authorities within the Department. It allows for the updating of records in much shorter time than was previously possible. The system used by the Regional Services Branch to maintain accurate and current prosecution records of violators of resource regulations was enhanced to include warning notices. The Section also delivered an automated inventory system to monitor the fixed assets of the Department. Improved Financial Management System reports were delivered at the beginning of the fiscal year. Special reports which aided

management in decision-making processes throughout the year were similarly upgraded.

The Section provided the computer analysis of questionnaire responses for the Parks Visitor Survey, Dial-a-Site User Survey, Angler Survey and Hunter Survey.

A study of the Departmental Gangsheet Payroll System was completed. The Section led the investigations of options for further improving the payroll process for Departmental employees. The Section also participated in the implementation of the Dial-a-Site program by arranging for the telecommunications services and developing the associated administrative procedures.

Economics & Program Review Section

Economics & Program Review Section

Responsibilities:

Assists departmental management in achieving the efficient and effective use of public funds by providing, on an assignment basis, analytical, economic, and evaluation support services.

During the year the Section conducted feasibility and benefit-cost studies of various existing or proposed projects and programs of the Department. A number of management information reviews were also undertaken to gather data and other statistical information essential for decision-making on program design and delivery. A variety of programs, both existing and proposed, were appraised for their efficiency and effectiveness. Departmental managers were assisted in identifying and establishing measurable goals and objectives for their programs. The Section carried out special studies related to such matters as fee levels, management information systems and client or user satisfaction.

Among the numerous projects and activities undertaken in 1982/83 were surveys of provincial park visitors, deer hunters and anglers. These surveys were undertaken in order to determine how resource users view the programs, services and facilities provided by the Department. A comprehensive review of various Department fees and charges was undertaken and appropriate fee revision proposals were developed. Branch managers were assisted in developing measurable goals, objectives and performance indicators which facilitate periodic evaluation of actual performance. Management information was developed respecting park use, costs and recoveries by park user category and data was supplied regarding forest industry values. An improved format for presenting statistical information in the annual report was also developed. Evaluations of the Department's fire management program, heavy equipment requirements and staff vehicle complement were conducted and a costing proposal was developed for Department publications. Economic benefits related to proposed new provincial forests were calculated as well as deer and duck values related to a private land habitat program. The Section coordinated the implementation of a campground reservation system, assisted in the development of a proposed Wild Rice Act and coordinated the development of Department roles and missions statements.

Resource Allocation and Planning Branch

Resource Allocation and Planning Branch

Responsibilities:

Assists in providing an integrated and coordinated approach to resource allocation and planning within and outside the Department; plays a lead role in allocation and planning of Crown land; administers ecological reserves program; assists in providing a comprehensive outdoor recreation strategy; formulates and reviews broad departmental program strategies.

Crown Land Allocation

Improved coordination of land and resource management within the Department has resulted in better departmental administration of land and resources. The inter-disciplinary overview land and resource management plan for the east side of Lake Winnipeg was completed and approved on an interim basis. The plan was then forwarded to other concerned departments in keeping with a desire to foster more effective inter-departmental coordination of land and resource use.

With similar objectives, preparation of a second overview plan for the undeveloped northern portion of the Interlake region was begun. The planning team is composed of representatives from Fisheries, Forestry, Lands, Parks, Water Resources and Wildlife branches and is coordinated by the Resource Allocation and Planning Branch.

As a result of the current overview planning program, it has been possible to give more effective direction to local departmental planning activities. These activities were conducted by resource planning committees which have been formed in the administrative regions of the Department. These committees, composed of field specialists from key branches, will undertake site-specific and local planning activities.

A proposal for land use planning in the area surrounding Flin Flon was developed. Communities in northern Manitoba are concerned with the uses that are made of Crown land on their peripheries. A process that involves the provincial government and the respective communities will help produce mutually acceptable Crown land plans.

In southern Manitoba, land use planning was conducted through participation on the Crown Land Classification Committee. Crown Land Use Classification plans were approved for the Brokenhead River, Cypress, Western Interlake and Neepawa and Area planning districts. In addition, similar plans were initiated for the Nor-Mac, South Riding Mountain, Eastern Interlake and South Interlake planning districts.

Proposed sales and exchanges of agricultural Crown lands are subjected to a clearance procedure to uncover objections, if any, to the transactions. A total of 578 requests were circulated to concerned government departments and agencies, local municipal councils and planning district boards. Responses to each request were summarized and submitted to the Crown Land Classification Committee for review and recommendations, then for action to the Provincial Land Use Committee of Cabinet.

Ecological Reserves

Inter-departmental clearances and approval by the Provincial Land Use Committee of Cabinet were acquired for the proposed Cowan Bog Ecological Reserve. This 500 hectare area, northwest of the village of Cowan, contains six varieties of native orchids, one of which is considered to be rare in this province. This excellent example of a typical black spruce bog also contains large numbers of pitcher plants.

Field inspections were undertaken for eight potential ecological reserves in southwest Manitoba by the Ecological Reserves Advisory Committee. These inspections clearly indicated the need to pursue an aggressive program since all but one of the sites inspected were no longer considered to be in fit condition for consideration as ecological reserves.

The Department plays an active role in the newly-formed Canadian Council on Ecological Areas. This Council has been established to facilitate inter-governmental and inter-agency coordination of ecological reserve programs. Manitoba participates in overall Council activities and has agreed to have its representative serve in the capacity of vice-chairman.

Municipal Planning

The Branch, on behalf of and in cooperation with other branches of the Department, prepares and submits natural resource materials required under The Planning Act. Reports for ten areas were completed: Lac du Bonnet, Eastern Interlake and Killarney Area planning districts; rural municipalities of Rhineland, La Broquerie, Ste. Rose, Portage la Prairie, Miniota, and Swan River; and the Town of Emerson. A number of draft development plans, basic planning statements and back-

ground reports were reviewed and evaluated. Reviews of proposed subdivisions of land were coordinated by this Branch and undertaken by the regional staff of Crown Lands Branch.

Outdoor Recreation and Tourism

The Branch assists in providing a comprehensive outdoor recreation strategy when required for provincial or regional planning. Contributions are designed to ensure the preservation of scarce outdoor recreational resources, to identify demand/supply ratios, and to provide recommendations for resolving outdoor recreation concerns. Reviews and comments on outdoor recreation were prepared for several land use and development proposals. Sections on outdoor recreation were prepared for reports dealing with the Manitoba Environmental Assessment and Review Process, with Crown land classification and with municipal and planning district planning.

As the Department's representative on the Licensing Advisory Committee of the Department of Economic Development and Tourism, the Branch reviewed and submitted recommendations on 45 applications for outcamps and caches throughout the province. The Branch reviewed the applications with other concerned branches of the Department relative to the availability of natural resources for tourist industry use. These reviews were used to establish departmental positions and recommendations to the Licensing Advisory Committee.

Environmental Assessment and Review

The Branch prepared Department responses to several proposals that came before the Manitoba Environmental Assessment and Review Process. Powerlines, roads and water developments were examined for their potential impacts on resources and resource users.

As the central agency for the Department in these matters, the Branch compiled information from other branches as well as from its own sources and made it available to project proponents and review agencies. Final assessments of the projects were reviewed and responses were compiled and forwarded.

Strategies and Special Projects

Progress was made on the comprehensive study which may lead to a departmental resource and recreation roads strategy. Results of the study will assist the Department in planning, operation and maintenance of resource roads.

A review of current wetland conservation strategies of the Department was initiated. Concern is being expressed increasingly over the status and trends of Manitoba's wetlands, i.e., those lowlands, including sloughs, potholes and marshes, covered by temporary, intermittent or permanent water and supporting marshy vegetation. The review will take into consideration the expanding knowledge on wetland values and the increasing threat to the future of wetlands from competing land interests.

The Branch is represented on an interdepartmental task force that is reviewing the 1980 Provincial Land Use Policies and acts as a focus for individual policies that relate directly to natural resources.

Other special efforts during the period under review included participation in the Lee River Project, an undertaking with other departments to rationalize existing land development in the Lee River-Pinawa Channel Area; initiation of lake planning where resource capabilities, carrying capacities and other factors associated with particular lakes are assessed and evaluated to establish use guidelines; and, in cooperation with the Department of Agriculture, the Twin Creeks Land Evaluation Study in the northern Interlake where several townships are being examined for their potential agricultural and natural resource values.

Public Information Services Branch

Public Information Services Branch

Responsibilities:

Advises on and coordinates communications programs to identify public needs and provides information to the public about resource policies and programs on behalf of the Department.

Public Information Services made several major changes during the year to better serve the Department and to improve the exchange of information between the Department and the public.

The use of radio and television provides a fast and efficient method of reaching large numbers of people or specific audiences. The audience for Resource News radio increased as the program format diversified. The program is now distributed in five forms: 5-minute and 30-minute programs, 8-minute radio features, newsclips and as a newsletter. The material was used regularly by all radio and television stations in Manitoba and by three daily newspapers. Radio publicity was further increased by promoting resource events on weekly campground/snow reports. In addition, weekly live and taped broadcasts of resource happenings were aired on CBC and CHMM in Winnipeg.

Heightened media interest in Department activities placed greater demands on staff. Training sessions on how to deal effectively with media personnel were held for Winnipeg staff and natural resource officers and a workshop on television interviews was conducted for branch directors.

Additional effort was directed toward identifying public concerns and recording trends in public opinion for use by resource managers. Resource Information staff answered more than 34,000 inquiries from Manitobans during the year. This service was extended to rural Manitoba when the Department began accepting collect calls on the Resource Information telephones. A newspaper clipping service was hired in cooperation with the Department Library to monitor all Manitoba newspapers for the Department and provide a weekly update.

A complete review of publication production and distribution was undertaken to streamline operations and to identify the responsibilities of Public Information and the resource branches. Included in the review was an analysis of production costs, preparatory to the development of a policy on selling publications. A Parks Branch publication, "Spruce Woods Provincial Park," became the first Department-produced brochure to be sold by Public Information Services.

As in past years, Public Information Services continued to provide a film and display lending service and distributed departmental and other resource-related publications to Manitobans. Art and design staff produced displays and interpretive signing for information programs in Wildlife, Forestry and Parks branches, and provided graphics support for publications and advertising carried out as part of resource management programs.

Thirty-one teenagers participated in the Wilderness Corps summer camping program. This year marked the end of a project which provided an outdoor experience emphasizing Manitoba resources for more then 1000 young people during its 14 years of operation.

Garrison Focus Office

Garrison Focus Office

Responsibilities:

Coordinates Manitoba's efforts against the construction of the Garrison Diversion Unit as presently designed; acts as a focal point of the activities of the Government of Manitoba in respect to its opposition to the Garrison Project; acts as a source of up-dated information for the public and non-government organizations interested in the project.

The establishment of the Garrison Focus Office in February of 1982 coincided with an increase in Manitoba's active opposition to the Garrison Project. A firm of lawyers specializing in environmental issues was hired in Washington, D.C. to provide advice on how Manitoba's case could be best presented to members of the U.S. Congress. Arrangements were also made, with the cooperation of the Government of Canada, to place a lawyer from the staff of the Attorney-General of Manitoba at the Canadian Embassy in Washington. He assisted Embassy staff in their efforts to ensure that Manitoba's concerns were being brought to the attention of members of the U.S. House of Representatives. He conducted his activities under the general guidance of the Canadian Ambassador to Washington for a period of 12 weeks in 1982.

A major activity of the Garrison Focus Office during the year was the distribution of information on the Garrison Project to the residents of Manitoba. Displays were prepared and exhibited at festivals and exhibitions within the province. The displays were staffed by students through the Student Temporary Employment Program (STEP). As a result of a training program developed by the Garrison Focus Office, the students were able to discuss the project with members of the public. Brochures and other information were also distributed. As a result of this activity, increased numbers of Manitobans and American tourists have become more familiar with the project and with Manitoba's legitimate concerns.

During 1982/83, the Garrison Focus Office coordinated visits to Washington by delegations from the Manitoba Legislative Assembly who were accompanied by members of the Canadian House of Commons and the Canadian Senate. These visits, augmented independently by those of the Action Committee Against Garrison and the United Canadian-American Anti-Garrison Lobby Group, were instrumental in achieving a vote of 252 to 152 against the Garrison Project in the U.S. House of Representatives. Even though funds were eventually provided for Garrison through the actions of the U.S. Senate, this vote by the House of Representatives has become a very significant landmark in efforts to ensure that the Garrison Project is not built with unacceptable implications to Manitoba.

Regional Services Branch

Regional Services Branch

Responsibilities:

Enforces resource acts and regulations; carries out resource management programs and monitors their success at the field level; administers and operates provincial parks on a day-to-day basis; conducts wildfire suppression activities.

Regional Activities

Regional Services Branch programs were administered through 63 district offices strategically situated throughout the seven regions of the province. Services provided by the Regional Services Branch included wildfire control and suppression, problem wildlife management, community relations, legislative development, resource regulation enforcement and supervisory and operational responsibility for fisheries, forestry, lands, wildlife and parks programs.

Regional Services is responsible for the operation of Manitoba's provincial parks, including the overall maintenance of all park infrastructure. In addition, the Branch recruits, deploys and supervises beach and park patrols.

The Branch administered resource acts and regulations through 115 Conservation Officers, 33 Park Rangers, 89 seasonal Park Patrol Officers, 10 part-time Wildlife Patrolmen and 64 Beach Safety Officers.

A brief description of some of the activities within each of the Department's seven regions is presented in the following pages.

Northeastern Region

The commercial fishing season was closed for the summer of 1982 in the region. The fall season went well but an abnormal freeze-up and record snowfalls contributed to a poor winter season.

Manfor curtailed its major forestry operations during the summer of 1982, primarily because of poor markets. Activities resumed in the fall and continued through the winter at a reduced scale. Local operations at Norway House, Cross Lake and Island Lake were active sporadically over the winter, cutting material primarily for local use.

An old campground was redeveloped and a winter recreation area was constructed at Paint Lake. The area proved to be extremely popular, especially during the winter.

The number of moose taken during the hunting season was slightly higher than in the previous year. There was a substantial increase in the populations of the Beverly and Kaminuriak caribou herds.

The Polar Bear Alert Program continued at Churchill. The program has helped to reduce polar bear problems in the area. No problem bears had to be destroyed in 1982/83.

Wolf-related complaints were high in all districts of the region. Deep snow encouraged the wolves to follow snowmobile trails into settlements in search of food. Many wolves were shot by residents of remote communities. Department staff were involved in reducing wolf problems.

Northwestern Region

A number of meetings were held with the Moose Lake Indian Band and The Pas Indian Band to discuss the Fisheries Act and Regulations and production quotas. Fishing success for lake trout in Athapapuskow Lake and Clearwater Lake was fair to good in the fall of 1982.

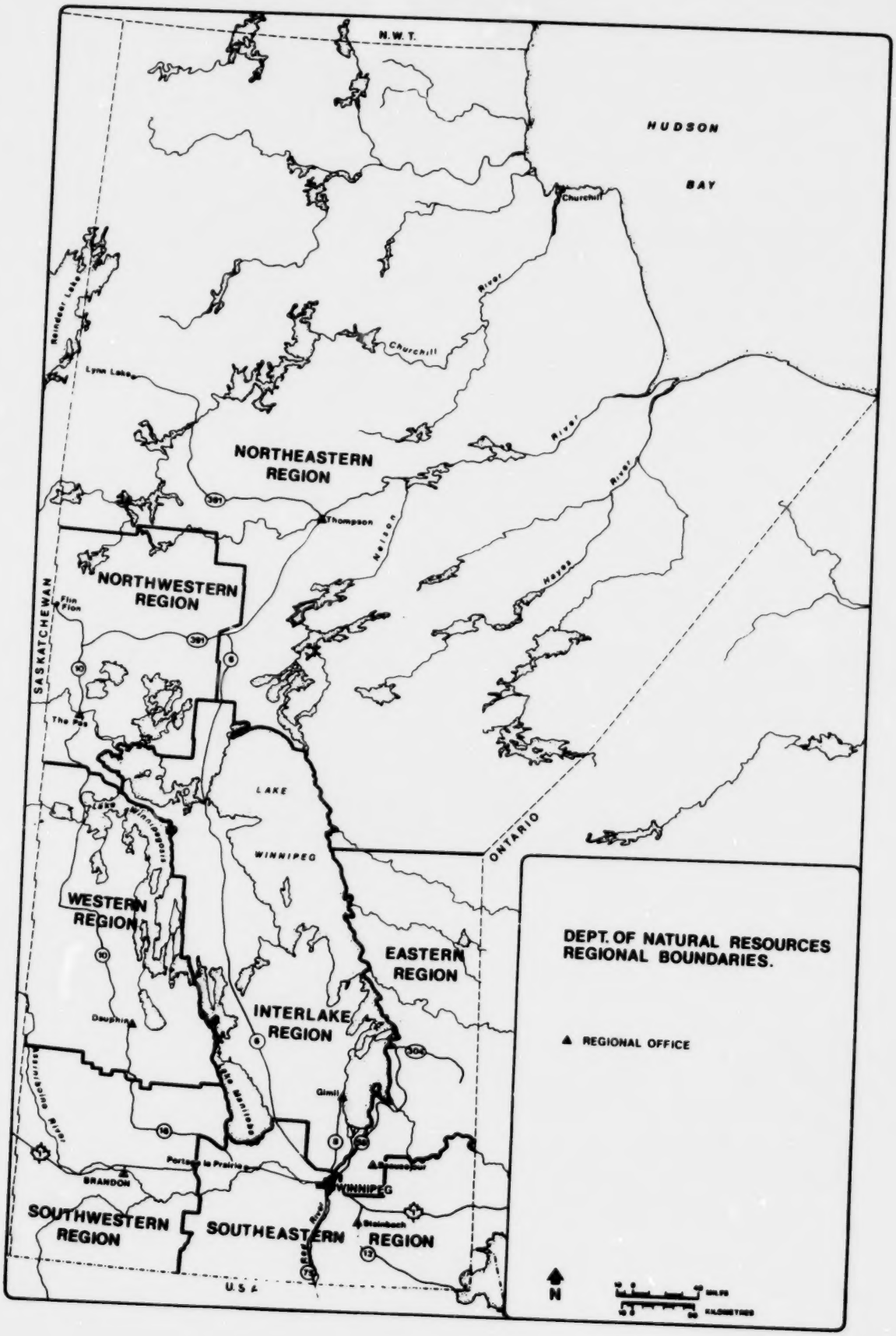
Park use was low at the opening of the 1982 season because of inclement weather. All seasonal campsites were filled at the draw date and general park use was moderate to heavy. Handicapped access areas at Pioneer Bay and Sunset Beach day-use area were completed.

The Wekusko Helitac Base was established in June of 1982, with a Bell 204 helicopter contracted to operate from the base. On July 2, this helicopter and its pilot were used to rescue a person from a capsized boat.

In other activities, a large number of wild rice applications were received. Natural Resources staff seeded a number of lakes with wild rice on an experimental basis. Three new timber sales were added to the Cranberry Portage district. Department staff attended eight meetings of the Cottage Owners Association. Trapping was poor because of poor fall and spring slush conditions.

Western Region

A five-year Federal/Provincial Fisheries Program is being conducted on Dauphin Lake to enhance the fishery for both sport and commercial fishing. The federal fisheries staff have conducted various surveys determining water depths, ice depths and water levels. Air surveys and air photos indicate that large amounts of deposits flow into Dauphin Lake creating a major pollution problem. Regional


N.W.T.
HUDSON
BAY
Churchill
Reindeer Lake
Lynn Lake
Churchill River
NORTHEASTERN REGION
Thompson
Nelson River
Hayes River
NORTHWESTERN REGION
SASKATCHEWAN
Flin Flon
The Pas
LAKE WINNIPEG
ONTARIO
WESTERN REGION
EASTERN REGION
INTERLAKE REGION
Dauphin
Lake Manitoba
Gimli
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▲ REGIONAL OFFICE
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staff assisted in collecting some of the data for this program.

A three-year creel census on stocked trout waters in the Duck Mountain area was completed. The results of this census will be used in developing stocking procedures for the entire province.

An estimated 2066 white-tailed deer were fed at 55 feeding stations maintained through the Department's deer feeding program over the winter of 1982/83. In addition, several farmers set up feeders on their own, with some of the feed being supplied by the Department. Wildlife habitat plots in the Alonsa Wildlife Management Area were seeded and extensive use was made of them by deer in the fall. Some plots in the Duck Mountain area were brushed and seeded to improve habitat for elk.

Overall fur value was down from previous years. Lower prices resulted in lower harvests of muskrat, beaver and fisher pelts. Muskrat populations remained low.

Asessippi Provincial Park showed an increase in attendance during the 1982 season. Revenue was up by more than 159% and the number of permits increased by 87.5%.

During 1982/83, there were 681 occurrence reports relating to problem wildlife. Of these, 105 were bear-related problems and 352 were beaver occurrences.

Interlake Region

Timber wolves moved into the ranching area of the Interlake, necessitating the hiring of a full-time specialist to reduce their numbers during the winter. Twelve wolves were taken. Depredation by sandhill cranes intensified and beaver problems also increased, possibly related to reduced trapping pressure.

In parks, the restoration and stabilization of buildings at Camp Morton began. Heavy rainfall throughout the summer reduced park use and increased maintenance costs.

Nearly 1000 staff man days were spent by officers in enforcing The Fisheries Act and Regulations in the region. Lake Winnipeg was patrolled for eight months during three commercial fishing seasons. Officers patrolled Lake Manitoba for five months during the winter season and Cedar Lake for nine months during both the summer and winter seasons.

Over 1300 staff man days were spent on enforcing The Wildlife Act, a substantial portion of this time being accumulated on night patrols. A noticeable increase in the incidence of night-lighting has occurred, possibly due in part to the general economic situation.

To more evenly distribute the workload and to better serve the public, two Senior District Officers have been placed in charge of sub-regional offices at Riverton and Ashern. The Riverton office will supervise Hodgson, Hecla, Winnipeg and Selkirk; and Grand Rapids, Gypsumville and Lundar will report to the Ashern office.

Eastern Region

Sport fishing activity was very high, particularly in the Nopiming Park and Bissett areas. Fly-in fishing to remote camps, lodges and lakes in the area east of Lake Winnipeg was high in June.

Abitibi-Price was active in the Beaver Creek/Saxton Lake area west of Bissett. This operation was supplemented by 11 third-party operators also cutting for Abitibi. At Pigeon River, Channel Area Loggers produced 12,000 cords of pulpwood for Abitibi.

A very successful "cut your own" Christmas tree program was conducted in the Agassiz Provincial Forest with about 10,300 trees sold. Fuelwood demands on the "cut your own" areas were, as usual, very high, particularly by Winnipeg consumers.

At Birds Hill Provincial Park, the Aspen Fitness Trail was constructed and phase one of the Pine Ridge Bicycle Trail was completed. The Ninth Annual Folk Festival attracted a record crowd of 40,000 people. At Grand Beach Provincial Park, cross-country ski trail use increased. Springhill Winter Park attracted a record 14,350 skiers.

In 1982/83, 32 deer were killed by vehicles on Highway #59 near Birds Hill Provincial Park. To discourage deer from crossing the highway to alfalfa fields along the floodway, a program of deer feeding using feeders and feed plots has been established.

Moose hunting success was extremely poor in spite of increased hunting pressure. Meetings were held with all Indian bands to encourage cooperation in managing big game species.

Bear problems in cottage areas and beehive yards were very high with 84 complaints being recorded. Flooding caused by beaver activity along Cooks Creek and municipal ditches continued as a major problem.

Southwest Region

An increased number of visitors, particularly Manitobans, visited Spruce Woods Provincial Park during 1982/83. Several new developments were started; Devils Punch Bowl, Spirit Sands area and the S.S. Playmore structure and the Cornwallis and PTH #24 Wayside

Parks. An additional 20 campsites were provided at the Rivers Provincial Recreation Park.

Rehabilitation crews from the Brandon Correctional Institute provided a valuable source of labour for maintenance work. An ice storm throughout the region caused extensive damage to trees in parks and wayside campsites.

Some tree planting was undertaken in the region in an effort to enhance wildlife habitat. In Spruce Woods Provincial Park, three fields were planted to forage to help ensure wildlife survival over the winter and to provide visitors to the park with an increased opportunity to view wildlife in its natural state.

Most problem wildlife occurrences were related to problems with white-tailed deer. As a method of reducing deer damage to farm produce, portable feeders were situated in areas frequented by deer to discourage their depredation activities on farm haystacks. Fencing of hay yards was also undertaken.

Southeast Region

Commercial fishing production of pickerel, sauger and pike from the south end of Lake Manitoba was about the same as the previous year. Because of the increase in mullet sales through the Freshwater Fish Marketing Corporation, production of this species by most fishermen almost doubled over the previous year.

Of particular interest in sport fishing, fishing pressure for sturgeon in the Seven Sister reach of the Winnipeg River was fairly high and the success rate was very good. This phase of the fishery has increased rapidly over the past few years.

A windstorm in July caused fairly severe damage to timber in the region and resulted in several special salvage sales and permits being issued over and above regular quotas. The demand for fuelwood and miscellaneous fencing material by general permits remains strong and resulted in high use throughout the designated cutting areas. The pulpwood market was somewhat slower than in previous years; however all quotas were filled.

In parks, the Rennie, West Hawk and Falcon Lake districts reported a decline in summer park use. Winter use in all Whiteshell districts was significantly lower due to lack of snow and poor skiing conditions. Summer use at Norquay Beach has declined. Winter use at Beaudry Park has increased as more people become aware of the park.

Problem wildlife complaints within the city of Winnipeg increased significantly over the previous year. This was a result of a drastic increase in the raccoon population and public concern about a suspected rabies out-break in skunks. The Department assisted the City in a skunk removal program during this period. There were increased numbers of timber wolf complaints throughout the southeastern portion of the Region and in the Portage la Prairie district. Fortunately, near ideal harvest conditions resulted in a significant decrease in the number of waterfowl depredation complaints.

Fire Management and Communications

1) Fire Suppression

Favourable spring moisture conditions, timely showers throughout the summer and a cool fall combined to make 1982 a comparatively light fire season. The third lowest number of wildfire occurrences in the last ten years was recorded in 1982 at 425. These fires burned 15,445 hectares, including 4946 hectares of merchantable timber. Of the total area burned, 14,300 hectares were public land, the remaining area was private land.

Seventeen of the 425 fires burned just over 11,800 hectares, or 76.5% of the total area. The largest fire originated in the community of Gods Narrows and burned 2836 hectares.

Manitoba acquired a third CL 215 waterbomber. Three CL 215's, along with two Otters and two Turbo Beavers, were contracted from the Air Division of the Department of Highways and Transportation. In addition, four Bell Jet Ranger 206B and three Bell 204 helicopters were contracted for the 1982 fire season. Nine other aircraft were contracted for fire detection duties. Four Canso waterbombers and 41 helicopters were also chartered for short term use during the fire season. Total flying time for all fire management activities was 5631.2 hours, approximately half of the total of the previous year.

Because of the light fire season, other branches of the Department were offered the use of the contract aircraft on a no-cost basis beginning in early August. These branches used the aircraft for a total of 151 hours for purposes such as fisheries, wildlife, conservation officer activities, Dutch Elm Disease and other programs. One CL-215 waterbomber was sent to assist the Province of Alberta on two occasions during the fire season, flying a total of 87.9 hours.

The expansion of the Helitac program continued with an additional base being established at Paint Lake near Thompson to provide intensive protection to the Manfor areas in the Northeast Region. Two additional crews were

Causes of Fire, Area Burned and Suppression Cost 1982/83

Cause	Number of Fires	% Total of Fires	Area Burned (Hectares)	Suppression Costs
Man Caused:				
Recreation	62	14.5	1,932.6	$ 222,447
Settlement	64	15.0	373.7	87,162
Woods Operators	5	1.1	1.5	7,587
Other Industrial	4	0.9	5.9	5,152
Railroads	21	4.9	80.5	35,344
Public Projects	4	0.9	292.3	6,141
*Incendiary	93	21.8	7,310.7	563,053
Miscellaneous	28	6.5	118.2	65,316
Agricultural	14	3.2	768.5	24,894
Total Man-Caused	295	69.4	10,883.9	$1,017,096
Lightning	130	30.6	4,561.0	$1,708,156
Total	425	100	15,444.9	$2,725,252

*Many fires of unknown origin are included in the incendiary classification.

added to each base and each base operated with four Helitac crews in 1982. The Helitac crews fought 59 of the 425 fires reported during the season. The average loss of forested area per fire was reduced from 1981 through Helitac operations: from 1.49 hectares to 0.74 hectares at Bissett; from 167.44 hectares to 2.18 hectares at Wekusko Falls. The average loss at Paint Lake in 1982 was 6.50 hectares. The average fire size for the province as a whole was 36.34 hectares.

A system of volunteer fire crews was initiated in the Interlake Region. This program will be extended to other areas where the interest in the program has been promising.

2) **Training**

Training sessions conducted by Fire Management and Regional Services staff were attended by Provincial staff, Firetac crews, fire rangers, Northern Affairs community fire brigades, Armed Forces personnel, forest industry people, Parks Canada staff and municipal fire guardians.

Interlake and Eastern Region Firetac and Helitac crews were given additional training on the fire simulator during the summer. Duplication of all slide-tape training programs was completed and the programs supplied to the Regional Fire Control Officers.

The second annual Provincial Firetac Competition was hosted by the Interlake Region in mid-August. Six regional crews participated. The Western Region crew from Mafeking won the competition.

3) **Fire Prevention and Public Education**

The Department continued to support the Manitoba Forestry Association with funding, volunteer help and other assistance. A total of 5500 children from 101 schools visited the conservation training area at Hadashville to spend a day in the woods with instructors giving lessons on tree identification, fire detection and suppression. Each student was given a seedling provided by the Pinelands Forest Nursery.

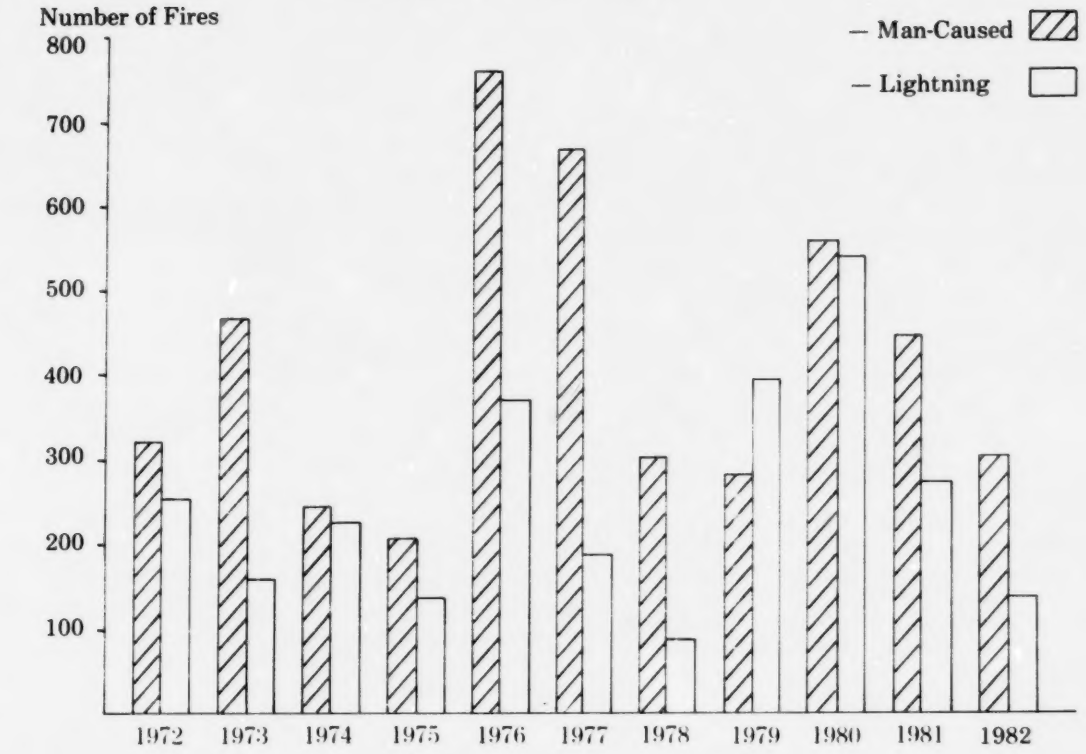
The Forestry Association visited Winnipeg schools and relayed their conservation message with films and demonstrations to 16,400 students. They also attended 47 rural schools to speak to 5096 children. The Smokey Bear reading club has 65,000 members.

Twenty-one schools, including three native communities were visited and 3376 students received the conservation message in films, lectures and discussions in the Eastern Region. A special program was initiated at Gods Lake Narrows with school children in an effort to reduce the number of fires starting in the community.

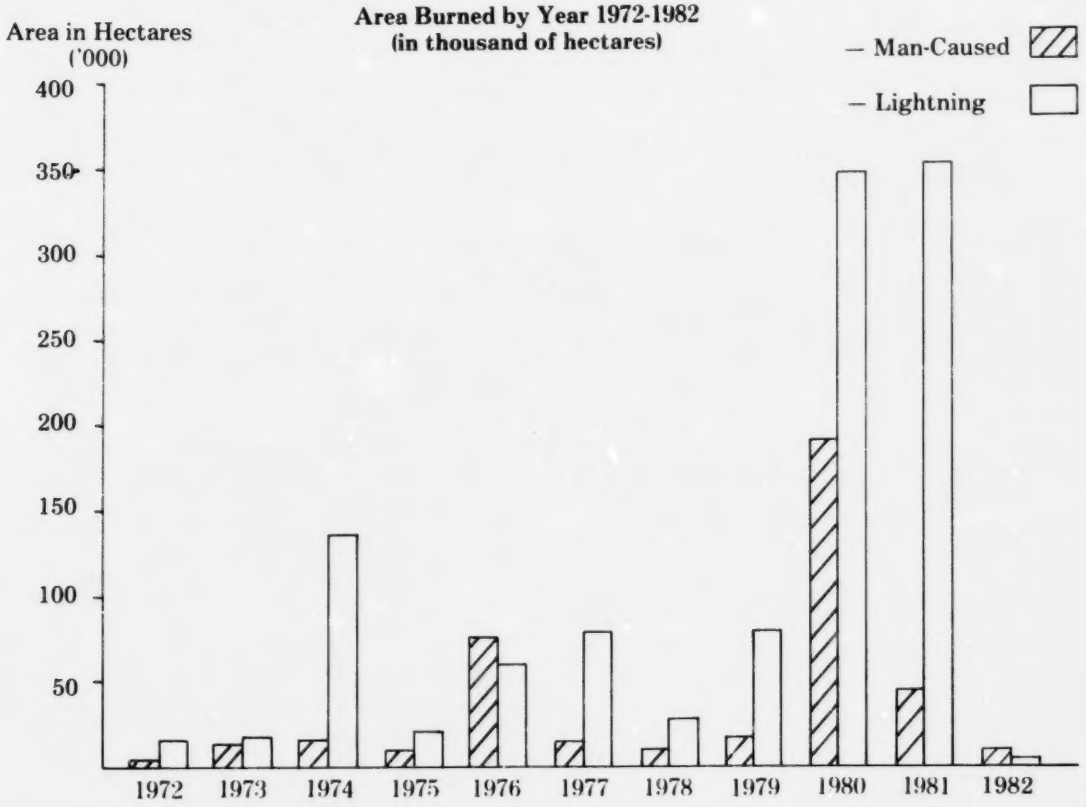
Funding was provided to hire four special patrolmen and one education officer to enhance the Fire Prevention Program in the rural areas of southern Manitoba. These field staff focused their attention on direct contacts with local people to reduce the number of man-caused fires in the fringe areas between settlements and forest land.

A two-day fire prevention seminar, held in Winnipeg in March, brought together three levels of government, industry, railways and senior staff of several government departments to improve communications and cooperation in reducing wildfires.

Number of Fires by Year 1972-82



Area Burned by Year 1972-1982
(in thousand of hectares)



Burning permits issued under The Fires Prevention Act have proven effective in controlling fires from land clearing and industrial operations. For example, 497 permits were issued in the Southern Region and more than seven hundred in the Western Region. Media advertising efforts were directed towards land clearing and stubble burning practices and the reasons for obtaining burning permits. Special attention was given to the Interlake Region.

Two Department floats were used at many local fairs and other parades throughout the southern part of the province in conjunction with displays and informational handouts with fire prevention messages.

Enforcement

Trafficking in game and fish and night hunting continue to be significant resource management and enforcement concerns. A consider-

Summary of the Most Common Violations under The Wildlife Act, 1982/83

Nature of Offence	Guilty	Dismiss	Stay	Withdraw	Adjourn	Total
Nightlighting	108	3	24	—	—	135
Loaded Firearm	104	1	7	—	—	112
Possession of illegally taken wildlife	39	1	6	—	—	46
Hunting on private land without permission	35	2	4	—	—	41
Hunting out of season	25	—	11	—	—	36
Other	152	5	27	3	—	187
Subtotal	463	12	79	3	—	557
Fines: $59,726.75 **Costs:** $ 861.00					Written warnings: 284 **Total:** 841	

Summary of the Most Common Violations under The Fisheries Acts of Canada and Manitoba, 1982/83

Nature of Offence	Guilty	Dismiss	Stay	Withdraw	Adjourn	Total
Sport Fishing						
Fishing without licence	117	1	5	—	—	123
Angling with too many lines	47	1	3	—	—	51
Exceeding limit	44	—	—	—	—	44
Unattended line/fish	20	—	2	—	—	22
Failure to carry/produce licence	13	—	3	—	—	16
Commercial Fishing						
Failure to comply with permit conditions	16	—	1	—	—	17
Decayed fish	11	1	3	—	—	15
Fishing without licence	13	—	1	—	—	14
Failure to mark equipment	10	—	2	—	—	12
Small mesh	4	—	—	—	—	4
General						
Fishing during closed season	56	2	3	—	—	61
Fishing/possessing fish without a lawful excuse	28	2	8	—	—	38
Other	45	1	12	—	—	58
Subtotal	424	8	43	—	—	475
Fines: $23,311.08 **Costs:** $ 914.50					Written warnings: 464 **Total:** 939	

Provincial Park Related Violations, 1982/83

The Parklands Act						
Nature of Offence	**Guilty**	**Dismiss**	**Stay**	**Withdraw**	**Adjourn**	**Total**
Creating disturbance/causing mischief	26	—	1	1	—	28
Damaging/defacing park/public property	17	—	3	—	1	21
Unlawful parking	18	—	1	—	—	19
Unauthorized fire	10	—	1	1	—	12
Possessing/discharging weapon	5	—	—	—	—	5
Other	20	—	2	1	—	23
Subtotal	96	—	8	3	1	108
Fines: $ 4,030.75 **Costs:** $ 189.95					Written warnings:	448 **Total:** 556

The Liquor Control Act						
Nature of Offence	**Guilty**	**Dismiss**	**Stay**	**Withdraw**	**Adjourn**	**Total**
Unlawful possession of liquor	433	1	17	2	—	453
Unlawful possession by minor	38	—	3	—	12	53
Sell/supply to minor	9	—	2	—	—	11
Consume/intoxicated in public	2	—	—	—	—	2
Show cause (seized liquor)	1	—	—	—	—	1
Subtotal	483	1	22	2	12	520
Fines: $22,204.00 **Costs:** $ 1,264.30					Written warnings:	73 **Total:** 593

able amount of officer effort was directed at attacking these problems. Together with action by the courts in assessing higher penalties for night hunting, some success can be recorded. For example, the 135 prosecutions for night hunting in 1982/83 indicates an approximate decrease of 58% from 1981/82

Several convictions for illegal trafficking in game and fish have been obtained and approximately thirty-six fisheries-related trafficking charges were before the courts at the end of the year as a result of a lengthy investigative operation.

Provincial Park enforcement was directed towards general security and safety with special emphasis on liquor abuse and traffic problems. These problems were identified by park user surveys as the most serious in the minds of the public. A total of 556 violations of The Provincial Park Lands Act and Regulations were dealt with by field staff. These consisted of 108 prosecutions and 448 written warnings.

Comparison of Hunting* and Fishing Prosecutions from 1973/74 to 1982/83**

Fiscal year	Hunting Prosecutions	Fishing Prosecutions
1973/74	453	249
1974/75	373	367
1975/76	492	422
1976/77	463	315
1977/78	698	276
1978/79	804	321
1979/80	782	370
1980/81	438	446
1981/82	897	597
1982/83	841	939***

* Includes violations under The Wildlife Act and The Migratory Birds Convention Act

** Sport fish violations only are shown for 1980/81 and earlier.

*** Includes The Fisheries Act (Canada) and The Fisheries Act (Manitoba)

A total of 3840 violations were handled by field staff consisting of 2087 prosecutions and 1753 written warnings. Total fines assessed for the resulting 1820 convictions amounted to $128,139.84.

The Highway Traffic Act						
Nature of Offence	**Guilty**	**Dismiss**	**Stay**	**Withdraw**	**Adjourn**	**Total**
Fail to stop	28	—	2	—	—	30
No licence/invalid licence	24	—	3	—	—	27
Speeding	22	—	3	—	—	25
Driving while suspended	12	—	2	1	—	15
Passing where prohibited	11	—	—	—	—	11
Other	88	2	7	1	—	99
Subtotal	185	2	17	2	—	207
Fines: $ 7,340.75 **Costs:** $ 439.75					Written warnings:	271 **Total:** 478

Summary of Recorded Violations by Act/Regulations, 1982/83

Legislation Offended	Disposition							Total Offences	Percent* Increase or Decrease
	Prosecutions						Written Warnings		
	Guilty	Dismiss	Stay	Withdraw	Adjourn	Total			
Wildlife	463	12	79	3	—	557	284	841	- 28
Liquor Control	483	1	22	2	12	520	73	593	- 20
Fisheries	424	8	43	—	—	475	464	939	- 15
Highway Traffic	185	2	17	2	1	207	271	478	+ 11
Provincial Park	96	—	8	3	1	108	448	556	+ 10
Criminal Code	38	2	27	2	1	70	7	77	+ 7
Fires Prevention	45	—	2	—	2	49	53	102	+ 4
Forest	24	—	1	—	—	25	60	85	+ 25
Clean Environment	19	1	3	1	—	24	24	48	+ 12
Migratory Birds	18	—	4	—	—	22	21	43	- 59
Small Vessels	10	1	1	2	—	14	32	46	+ 119
Snowmobile	9	—	—	—	—	9	2	11	0
Narcotics Control	3	—	1	—	—	4	—	4	- 20
Crown Lands	2	—	—	—	—	2	3	5	+ 400
Water Rights	1	—	—	—	—	1	—	1	+ 100
Petty Trespass	—	—	—	—	—	—	11	11	+1,100
Totals	1,820	27	208	15	17	2,087	1,753	3,840	- 12
	3,840								
Fines: $128,139.84 (-16%)**				**Warnings:** 1,753 (+10%)*					
Costs: $ 4,488.50 (-22%)*				**Prosecutions:** 2,087 (-25%)*					

*As compared to the previous year, 1981/82.

Hunter and Firearm Safety

The Minister initiated a review of dangerous hunting practices under the direction of this program during the year. The review will be helped by a landowner survey to be conducted in the new year, 1983/84.

A total of 20 persons were injured due to firearm accidents, the lowest number since the program began in 1964. Four hundred twenty-eight voluntary instructors successfully trained 4389 students in safe firearm use. Fifteen instructors received wall plaques marking 15-year service.

The Annual Accident Summary has been prepared and published separately. Of the 20 recorded accidents, seven occurred to hunters in pursuit of legal game. Non-hunting situations accounted for seven accidents while six occurred in hunting of non-game species.

Four instructor seminars were held to make instructors aware of improved techniques of instruction.

The Hunter Safety Program staff assisted Wildlife Branch staff in conducting one waterfowl and two moose hunting seminars.

Guide Training

A total of 617 guide licences were issued in 1982/83. Ninety-one guides completed training programs at Cormorant Lake, Oxford House, Thompson, Gimli and Boissevain. Fifty-three guides made application and were entered in the Guide Registry.

Updated tests of all licensed guides in the province were prepared and kept current for distribution to anyone requesting this service. A new guide regulation pursuant to The Wildlife Act was developed and enacted during the year.

Other Activities

The Branch, through the Legislative Officer, is responsible for preparing regulations under various statutes administered by the Department. During the year, 22 new regulations were prepared on behalf of other branches of the Department. This ensured that all Department field officers were kept well informed of any changes in regulations.

The Livestock Compensation Program is administered by the Regional Services Branch. Under this program, 22 claims were received with 10 being certified for payment. Payments totalled $10,300.

Silviculture programs were undertaken in fourteen campgrounds and one wayside. Storm-damaged and thrown trees were removed from two waysides. Planting programs were undertaken in twenty-three campgrounds, four waysides, five day-use facilities and two golf courses.

To minimize costs for planting programs, Boy Scouts and school groups undertook planting of 16,000 trees in four provincial parks.

Parks Branch

Parks Branch

Responsibilities:

Manages a park system to provide for the conservation and management of wildlife and flora, for the preservation of cultural, ecological and other resources therein and to facilitate the enjoyment of outdoor recreational opportunities for Manitobans and visitors to Manitoba; develops plans to meet the recreational needs of the public; plans and manages park visitor programs; administers the management of recreational businesses in parks; plans and manages special user programs.

Park Use and Development

The Parks Branch manages 12 natural parks, 3 heritage parks, 44 recreational parks, 100 campgrounds and 107 wayside parks.

In 1982/83, overall use of Manitoba's Provincial Parks continued to increase with significant higher usage evident in the western, southwestern and northwestern regions. Specific user demands, as determined by user questionnaires, resulted in the development of additional facilities in some areas. Greater emphasis was and will continue to be directed to improving and strengthening the existing parks infrastructure, and on upgrading and maintaining existing parks.

Development of additional vacation home opportunities for the public continued, however, demand was very low. Lots were available at Singush and Wellman lakes, the Northcliff subdivision on Lake Winnipeg and at Paint Lake Provincial Recreation Park. New lots were developed at Paint Lake and at Schist Lake for release to the public in May of 1983. In total, 5257 vacation home lots are managed by the Parks Branch.

Through a series of public draws, 954 seasonal camping sites were allocated to the public and 219 trailer village sites were occupied during the season.

Park vehicle entry permits were issued to 543 special group users. They include non-profit organizations, schools and other community and self-help groups.

The Barrier-Free Access Program to upgrade access to facilities for disabled persons was continued. Improvement of shower and washroom facilities was undertaken at many campgrounds.

A new shower building was constructed at Hugo Bay Campground. Several campgrounds were expanded; namely, at West Hawk Trailer Village, Moose Lake, Hecla, Wellman Lake, and Asessippi Provincial Park campground. Sewer and water improvements were initiated in campgrounds at Paint Lake, Grand Beach, Asessippi, Toniata, West Hawk Lake, Lynch Point, Wellman Lake, Spruce Woods and Rivers Provincial Recreation Park.

Work commenced on self-guiding trails and interpretive signing in the Devils Punch Bowl at Spruce Woods. Work initiated on the Cornwallis Wayside Park will include picnic and boat launch facilities. Construction of the Portage Spillway Wayside Park was completed.

Toboggan slides, skating areas and cross-country ski trails were developed and improved at Clearwater Lake Provincial Park and at Paint Lake Provincial Recreation Park.

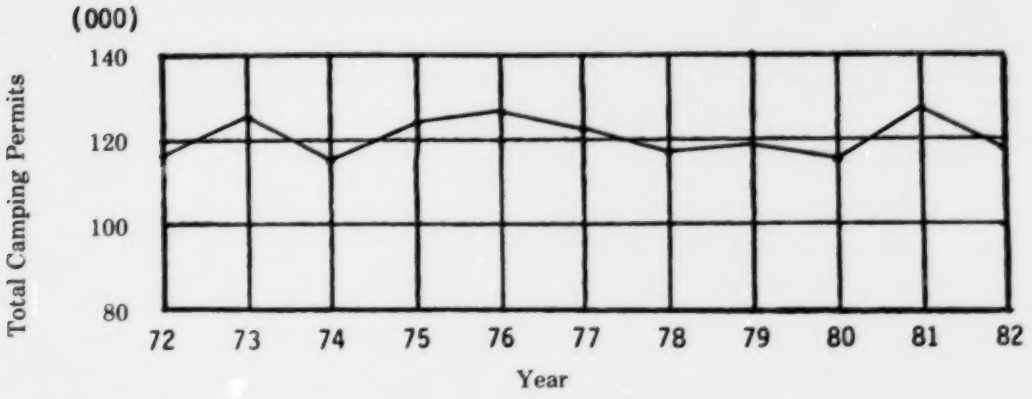
Visitor Services

Ninety-eight thousand people were contacted through Visitor Services programs. Nearly 19,000 persons attended amphitheatre programs, 33,000 dropped in to visitor centres and 13,000 attended special events.

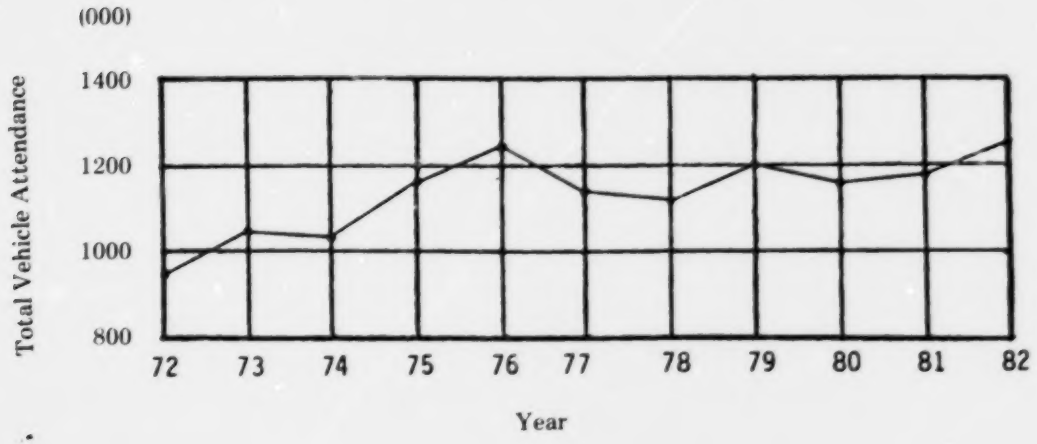
Numerous special events were organized. At Hecla Provincial Park local resident volunteers conducted commercial fishing demonstrations which attracted 1000 people over a four day period. Open houses were conducted at Birds Hill Provincial Park. Seven hundred students participated in summer school sessions. Twenty-four teachers participated in summer in-service sessions. Winter programs and in-service sessions attracted 1100 students and 48 teachers. At Spruce Woods Provincial Park, the local Children's Dance Theatre used the amphitheatre for one program. The third annual "Nickelodeon" was held and featured old films, music and numerous other activities. Winter events at Spruce Woods included dog sled races, a community winter sports day and a Heart Fund Ski-a-thon.

The Product and Program Development Unit initiated 119 projects. Self-guiding trails with on-site signing and pamphlets were developed in Birds Hill, Whiteshell, Spruce Woods, Hecla, Asessippi and Turtle Mountain provincial parks. Two hiking trails were improved in the Whiteshell, including re-routing the trails, erecting signs and developing brochures. Packaged slide shows were developed on "Winter in Manitoba Parks," "Hecla Provincial Park" and "Birds in Manitoba." In Birds Hill, a park information vehicle pull-off was designed and constructed. Informational on-site signs were

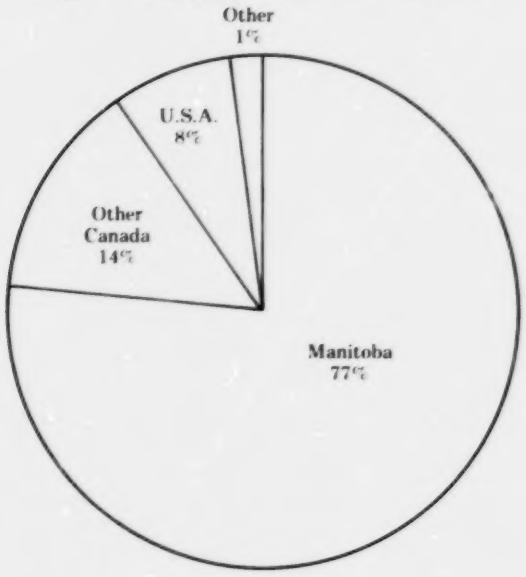
Total Camping Permits Issued in Provincial Parks, 1972-1982



Total Vehicle Attendance in Provincial Parks, 1972-1982



Origin of Camping Permit Holders, 1982



Key Indicators of Park Use, 1978-1982

Year	Vehicle Entries	Park Entrance Permits		Camping Volumes	
		Daily	Seasonal	Non-Seasonal Unit Days	Seasonal Permits
1978	1,144,719	138,214	33,241	198,138	821
1979	1,190,266	144,069	33,443	202,088	850
1980	1,119,557	131,582	29,351	202,088	868
1981	1,136,790	145,024	29,496	218,065	1,030
1982	1,253,370	141,175	29,655	215,406	1,109

Park Revenue Summary for 1982

Park Use Fees	Fee	Number of Units (Users)	Total Revenue
1. Camping Permits			
— Unserviced	$ 5.00	243,634 days	$ 867,171
— Electrical	6.00	91,915 days	348,899
— Fully Serviced	8.00	30,394 days	105,772
Sub-total		365,943 days	$1,324,060**
2. Park Entrance			
— Daily Entrance	2.00	141,175 days	$ 283,120
— Seasonal Entrance	10.00	29,655 days	296,550
Sub-total		170,830 days	$ 579,670
3. Games Area			
— Golf Course, Hecla Island		22,705 days	$ 130,075
— Golf Course, Falcon Lake		28,873 days	156,375
Sub-total		51,578 days	$ 286,450
— Other Games Areas (incl. miniature golf, lawn bowling, marinas)			31,311
Sub-total			$ 317,761
4. Rental Fees & Miscellaneous			
— Cottage Rentals			$ 64,705
— Vacation Lot Rentals			1,001,578
— Commercial Revenue			185,086
— Lot Development Fees			7,962
— Miscellaneous Fees			78,890
Grand Total			$3,559,712

**Includes $2,218.00 from Dial-A-Site.

also developed for Grand Beach and Wekusko Falls. Several new informational publications were produced for these parks.

Recreational Businesses

There are 97 commercial recreation operations situated within Provincial Parks that are administered by the Parks Branch. These operations include hotels, stores, refreshment stands, riding stables, marinas and other similar services. At the request of the operators, a review of lease rental agreements and the development of a revised fee scheduling system based on land value and service assessments was undertaken.

Planning

The major projects during the year included the development of a Parks System Plan, the Whiteshell Master Plan, Turtle Mountain Master Plan, Grass River Master Plan and background work for the Hecla-Grindstone Master Plan.

Interim Management Guidelines for Beaudry Provincial Park, Nopiming Provincial Park and the Bald Head Hills in Spruce Woods Provincial Park have been developed. These proved important in controlling development until master plans can be developed and approved.

The Parks Branch, in cooperation with other agencies, contributed to the City of Winnipeg Leisure Needs Advisory Research, investigating potential action that could be taken on the Riverboat Alpha and the Chicama II, two historic wooden boats that once sailed the Assiniboine River and Lake Winnipeg.

Guidelines for a Barrier-Free Access Program were established to facilitate access for the handicapped in parks. Portage Spillway Wayside Park was completed and officially opened in September. This facility provides a handicapped fisherman's pier and access to picnicking and washroom facilities.

Plans for new subdivision cottage lots were completed for Schist Lake and Steeprock Lake.

Occupancy Data for Selected Campgrounds and All Campgrounds for 1982

Departmental Region — Campground	Number of Sites	July Occupancy Rate (%)*		Overall Occupancy Rate (%)	
		Weekend	Overall	Weekend	Overall
South-Eastern Region					
Falcon Lake — Beach	292	99.8	95.2	59.6	46.2
West Hawk Lake	161	99.7	89.3	60.4	42.9
Eastern Region					
Birds Hill	533	123.9	81.1	64.6	37.9
Grand Beach	403	94.9	78.5	51.7	34.5
Interlake Region					
Gull Harbour	213	88.2	70.7	59.0	35.8
South-Western Region					
Adam Lake	110	65.5	46.6	36.0	25.3
Kiche Manitou	121	191.8	139.5	115.9	72.1
Western Region					
Blue Lake	109	101.7	82.7	53.6	37.4
Northwestern Region					
Bakers Narrows	76	86.6	83.4	54.5	47.6
Northeastern Region					
Paint Lake	43	145.0	93.3	92.5	54.5
All Campgrounds	5250	80.9	59.7	48.6	30.5

*July has historically been the month with the highest occupancy % in most campgrounds. Occupancy on weekends is usually considerably higher than weekday occupancy. Weekend occupancy in July is therefore an indicator of "peak" campground use.

Public accesses to the Assiniboine River Corridor Canoe Route were developed. A four mile bicycle path was laid out in Birds Hill Provincial Park. Nutimik Lake Seasonal Campground was redesigned and will include the construction of a modern washroom. A Park Building Standards and Construction Design Manual was initiated to reduce design time and increase efficiency.

Resources Management

A number of projects were undertaken in consultation with the Wildlife Branch. In Birds Hill Park a reflector program was studied as a possible approach to reducing deer-vehicle collisions along PTH #59. Fields in the park have been planted with forage crops and watering areas were constructed to lure deer away from the highway and to increase deer viewing opportunities for park visitors. In addition to the forage crops, winter feeders were installed to ensure winter survival for deer herds. In the Alfred Hole Goose Sanctuary, eight nesting islands were constructed and shoreline improvements were made to increase the brood rearing area, in conjunction with Ducks Unlimited.

A "no hunting" area was proposed on Hecla Island coinciding with a program to improve moose viewing possibilities for visitors and to enhance interpretive programs. In Beaudry Provincial Park, deer forage and waterfowl nesting cover programs were completed.

Spruce Woods Provincial Park has had three fields planted with forage crops to ensure increased wildlife survival in winter and to enhance wildlife viewing potential for visitors.

A creel census was initiated on Clearwater Lake to provide data for future management. A lake inventory and habitat improvement program was initiated in the Whiteshell Provincial Park.

In consultation with the Forestry Branch a number of programs were conducted to identify forest pathogens and propose remedial actions.

Public Affairs

A campsite holiday reservation system was initiated in 1982. The program, called Dial-a-Site, provided campers the opportunity of reserving a campsite situated in one of the several campgrounds designated for the program. A user survey indicated a positive reaction to the program.

A Provincial Parks Community Relations and Summer Promotion display was set up at 13 special events through the province during the summer of 1982. More than 17,000 people were contacted personally through this program. In an effort to encourage the public to use provincial campgrounds, 2225 introductory camping passes were distributed free-of-charge.

Water Resources Branch

Water Resources Branch

Responsibilities:

Provides short and long-term planning for the management and development of water resources in Manitoba; plans and develops the construction and maintenance programs for provincial water control works; conducts studies and investigations related to the management and use of the water resources in the province; administers several water-related Acts of the Legislature, including The Water Rights Act and The Water Power Act; provides engineering services to municipal councils and conservation districts boards.

Water Management

A) Water Rights

There were 102 applications received during 1982/83 for the right to use, divert or impound water. Evaluations and site inspections were conducted for each application. Aquifer pumping tests were carried out by the applicants for each groundwater use request and reviewed by the Water Rights Section. Engineering plans for dam projects provided by the applicants were also reviewed to ensure they were acceptable.

Twelve complaints were received regarding interference with water supplies or alleged violations of The Water Rights Act. There were 187 initial inspections and numerous follow-up inspections related to water rights applications and other activities under The Water Rights Act.

There were 124 licences issued during the fiscal year; 6 for the impoundment of water, 49 for diversion of surface water and 69 for diversion of groundwater. The uses authorized by the licences were: domestic use, including stock-watering — 7; municipal — 16; industrial — 7; irrigation — 81; waterfowl conservation — 3; wild rice production — 4; other — 6.

A revised Water Rights Act was drafted. It would replace the existing legislation which was originally enacted in 1930 and has been amended several times over the years. The new Act introduces, clarifies or strengthens certain powers of the Province in relation to the issuing of licences for construction of works and/or the use of water, removal of unauthorized works, repairing or demolishing unsafe works, cancellation of licences and offences and penalties.

B) Permits and Approvals

1) Waterway Opening Investigations

Waterway openings through or adjacent to provincial roads and trunk highways were examined to determine their hydraulic adequacy. Fifty-two bridges and 1481 separate culvert installations were examined.

2) Crown Land Use Investigations

Investigations were conducted relating to 418 requests for use of 799 parcels of Crown land. If the parcel in question was not subject to flooding or erosion, with the exception of water lots, the proposed use was recommended for approval. Also, the present or future water power requirements for land located within water power reserves and affected by water power licences were also reviewed.

3) Red River Valley Designated Flood Area

Fifty-eight permits for construction were issued under the Red River Valley Designated Flood Area Program. The permits allow new construction or reconstruction in the Designated Flood Area provided the finished main floor level of the structure is 0.9 metre above the level of the 100 year flood.

4) Hydroelectric Power Generation

Winnipeg Hydro replaced the concrete surface of all rollways at the sluicegate structure and installed rock bolts at the Slave Falls Generating Station. Manitoba Hydro also conducted a number of rehabilitation and repair projects on hydro-electric plants. At the Great Falls Generating Station, rehabilitation work continued with reinforcing and grouting of downstream powerhouse walls and installation of a frost protection system. At the Seven Sisters Generating Station, repair and replacement of the sluiceway centre and south piers continued. Concrete was also replaced on the powerhouse downstream crane rail beam and downstream face of the tailrace deck.

A total of $11,713,477.30 was collected from Manitoba Hydro and Winnipeg Hydro for 1982 water power rentals, storage charges and land rentals. During 1982, hydroelectric power production in Manitoba totalled 20,588,631,200 kilowatt hours, an increase of about 14.4% over the previous year. A total of $11,063,936.00 was collected in rentals on the 1982 water power output, an increase of 15.0% over the previous year.

Storage charges amounting to $165,777.82 were collected from the water power producers

Requests for the Use of Crown Land, 1982/83

Nature of Request	Number of Requests	Number of Parcels Involved
A) Lands Within Water Power Reserves		
— Remove Reserve	25	25
— Temporary Use of Land	35	36
— Purchase of Land	12	12
— Request for Water Lot	11	11
— Other Uses (subdivisions, exchanges, easements, etc.)	43	46
B) Lands Within Operation of Water Power Licences		
— Remove from Operation of Licence	2	2
— Temporary Use of Land	4	4
— Purchase of Land	1	1
— Other Uses (subdivisions, exchanges, easements, etc.)	8	8
C) Crown Land Outside of W/P Reserves/Licences		
— Proposed Sale for Agriculture	28	93
— Transfer Under the Local Government District Land Transfer Program	6	255
— Purchase for Other Purposes	46	46
— Temporary Use Under Lease or Permit	126	138
— Other Uses (subdivisions, exchanges, easements, etc.)	71	122
Total	418	799

Water Power Development to December 31, 1982

Owner	River	Plant Name	Normal Head in Metres	Installed Capacity in Megawatts Present	Ultimate
City of Winnipeg	Winnipeg	Pointe du Bois	14.02	78.33	78.33
City of Winnipeg	Winnipeg	Slave Falls	9.14	71.62	71.62
Manitoba Hydro	Winnipeg	Seven Sisters	18.59	149.20	149.20
Manitoba Hydro	Winnipeg	Great Falls	17.07	125.33	125.33
Manitoba Hydro	Winnipeg	Pine Falls	11.28	85.05	85.05
Manitoba Hydro	Winnipeg	McArthur	7.01	59.68	59.68
Prov. of Manitoba	Kanuchuan	Kanuchuan	5.49	1.42	4.25
Manitoba Hydro	Laurie	No. 1 Site	16.76	5.22	5.22
Manitoba Hydro	Laurie	No. 2 Site	16.76	5.22	5.22
Manitoba Hydro	Nelson	Jenpeg	7.32	167.10	167.10
Manitoba Hydro	Nelson	Kelsey	15.24	219.32	313.32
Manitoba Hydro	Nelson	Kettle	30.02	1,253.28	1,253.28
Manitoba Hydro	Nelson	Long Spruce	24.38	1,007.10	1,007.10
Manitoba Hydro	Saskatchewan	Grand Rapids	38.10	447.60	447.60
			Totals	3,675.47	3,772.30

and paid to Canada by Manitoba. These charges represent the portions of the maintenance and operating costs of the Lake of the Woods and Lac Seul storages chargeable to power developments in Manitoba.

Land rentals associated with water power production amounting to $483,763.48 were collected from Manitoba Hydro and Winnipeg Hydro.

5) Water Supply for Existing Power Developments

Winnipeg River — The flow on the Winnipeg River at Slave Falls averaged 884 m^3/s during 1982. This was 104.9% of the long-term average flow.

Lake of the Woods — Water levels on Lake of the Woods were maintained within the approved range of 321.9m to 323.5m, reaching a low of 322.26m in March and a high of 323.30m in early December. Outflow from the lake varied from 181 m^3/s in April to 645 m^3/s in December.

Lac Seul — The normal range of regulation for Lac Seul is between 353.0m and 357.2m. The lake level reached a low of 354.42m in March, then rose to a maximum of 356.66m in August. Outflow from the lake varied from 36 m^3/s in May to 395 m^3/s in November. The Lake St. Joseph Diversion was operated at an average flow of 75.6 m^3/s during 1982.

Nelson River — Flows on the Nelson River at the Kelsey Generating Station averaged 1850 m^3/s during 1982, which was 74.6% of the long-term average flow.

Saskatchewan River — The mean flow of the Saskatchewan River at the Grand Rapids Generating Station during 1982 was 491 m^3/s or 61.7% of the long-term average.

6) Undeveloped Water Power:

The figures represent the amount of power which could be available continuously on the indicated bases, and do not include developed or undeveloped power available at the Jenpeg, Kelsey, Kettle and Long Spruce sites on the Nelson River, at Kanuchuan on the Kanuchuan River or at Sites No. 1 and 2 on the Laurie River. If fully developed, the total installed capacity of the above rivers would considerably exceed the figures.

The undeveloped water power resources are estimated to be slightly more than 2500 continuous megawatts, at 95% flow. The major water power rivers are located in the northern part of the province.

Water Development Planning

A) Provincial Water Management

1) Plum Lakes

Land use conflicts in the Oak-Plum Lakes area and requests for action from local and regional residents have been before the provincial government for at least 30 years. The two main and conflicting interests in the Plum Lakes are agriculture and natural resources. Terms of reference for a study of the Plum Lakes were provided to the Manitoba Water Commission and a report was being prepared for release in May, 1983.

2) Pelican Lake Regulation

In order to improve the regulation of lake levels and enhance water quality in Pelican Lake, the Department has undertaken investigations related to the reconstruction of the water supply channel from the Pembina River to the lake, and the construction of control works at the outlet of the lake. These improvements would be costly and since regulation would largely benefit recreational users, it is felt that this sector should be responsible for paying some of the cost. At the end of the year, the Rural Municipality of Riverside was considering reconstructing the supply channel on its own and obtaining easements from cottage owners around the lake to gain flooding rights.

Manitoba's Undeveloped Water Power Resources in Continuous Megawatts at 88% Efficiency

River	95% of Time	50% of Time
Berens	5.22	17.16
Burntwood	394.04*	512.20*
Churchill	102.95*	138.76*
Gods	26.11	43.27
Grass	5.22	19.40
Hayes	2.24	8.95
Kanuchuan	11.93	19.40
Laurie	1.49	2.24
Nelson	1,817.03**	3,042.11**
Pigeon	15.66	40.28
Seal	123.09	347.63
Totals:	2,505.00	4,191.40

* With Churchill River Diversion
**With Churchill River Diversion and Lake Winnipeg Regulation

3) Dauphin Lake Regulation

Recreational interests in the Dauphin Lake area have been seeking an increase in the range of regulation of Dauphin Lake from 260m - 260.3m to a range of 260.3m - 260.6m. Agricultural interests in the area have opposed an increase in the range of regulation. Such an increase would require the purchase of peripheral lands which would be subject to flooding from the 1:100 year flood. The Manitoba Water Commission is reviewing the situation.

4) Fairford Dam

Arrangements were made to install a fishway in the Fairford Dam to accommodate spawning whitefish and the Dauphin River fish hatchery. Parts of the structure have been fabricated and installation will take place during the winter of 1983/84.

5) Rice Lake

Rice Lake provides the major source of water for the town of Bissett. In order to stabilize water levels in the lake, the existing dam was raised and widened and a spillway was constructed.

6) Oak Hammock Marsh

In order to realize the full wetland management potential of Oak Hammock Marsh, an adequate and dependable water supply is required in addition to the ability to completely drain portions of the marsh as rapidly as possible. In the summer of 1982, the Water Resources Branch, upon a request from the Wildlife Branch, undertook a study to determine viable options for improving the marsh's water supply and drainage. The preliminary report has been completed, with recommendations to divert spring snowmelt water from Wavey Creek as a means of providing a water supply and to utilize Wavey Creek, Dewar Drain and Parks Creek as drainage outlets for the three cells of the marsh. The final design of the proposed works was initiated with construction tentatively planned to begin in the summer of 1983.

7) Shannon Creek

Five potential headwater storage sites in the upper Shannon Creek watershed have been identified for further investigation as a means of reducing downstream flood peaks. Investigations were underway to determine the effect that these storage sites may have on reducing flood flows in the provincial waterways downstream of the boundary between the rural municipalities of Roland and Thompson.

8) Dennis Lake

Dennis Lake is situated in the Interlake about 24 kilometres west of Gimli. Agricultural interests have indicated a preference for a regulated level of the lake of about 265.8m and wildlife interests would prefer a regulated level of about 266.4m. Since 1974, levels have frequently exceeded 267.0m. With no natural outlet below 267.2m, flooding occurs when precipitation and inflow exceed evaporation and outflow.

Four regulation schemes each involving an outlet to the east into Willow Creek via the South Malonton Drain were investigated by the Water Resources Branch together with the Wildlife Branch, the Department of Agriculture and Ducks Unlimited. A summary report is being completed. Three multi-purpose schemes that would result in additional agricultural, wildlife and recreational benefits had benefit-cost ratios of slightly less than one. The fourth, a single purpose agricultural scheme was not economically feasible mainly because of the significant losses in wild fur production that would result with this scheme. A multi-purpose scheme that suggests regulating Dennis Lake to a target level of 266.4m has the highest benefit/cost ratio.

A major factor that contributed to producing benefit/cost ratios of less than one was the high cost of excavation through the compacted silt ridge which runs along the east side of Dennis Lake.

9) Fisher River

The feasibility of developing headwater storage in the upper reaches of the Fisher River drainage system in the Interlake was investigated. In particular, three potential storage sites were investigated in some detail. It appears that headwater storage would not be a practical means of reducing peak flows on the Fisher River at the Peguis Indian Reserve. The only feasible alternative from an engineering viewpoint would be a diversion-detention project in the Dallas area. The least costly storage alternative for this area has an estimated cost of about seven million dollars to protect against the 1% peak flow.

10) Dubas Creek Drainage System

A benefit/cost analysis is being conducted to determine a feasible standard of drainage improvement for the Dubas Creek drainage system, north of East Selkirk. The objective is to improve agricultural productivity on approximately ten hectares of agricultural land.

11) Omands Creek

A report on a Phase I study addressing the current problems of flooding and bank instability experienced on Omands Creek through the city of Winnipeg is being reviewed by a committee representing the City of Winnipeg and

the Province of Manitoba. Depending on what the committee decides, the study may proceed to a second phase which would examine various options of providing a high standard of protection.

12) Water Demand Study

A study into municipal and industrial water uses in the Manitoba portion of the Saskatchewan-Nelson Basin examining all but the most remote areas of Manitoba was completed in 1982. The study is part of a larger report on historical and current water uses in the prairie provinces that was undertaken by the Prairie Provinces Water Board.

Of the 249 billion litres of water used in 1978, about half was used for industrial purposes. Over 90% of the water used by industry was drawn from private sources. It was concluded that population figures could be used to adequately determine the demand for water on a sub-basin level. On a community level, however, it was determined that usage by industry, institutions and to a lesser degree by the other user groups as well as losses must be determined. It was discovered that very little data on private industrial water usage was available and that municipal records were often inadequate. Recommendations were made for improving the weaknesses and inadequacies in this data.

13) Reservoir Regulation

During 1982, the level of Lake Manitoba rose from 247.38m in April to 247.58m in July and gradually receded to 247.3m in December. The flow at the Fairford Dam was maintained at 14 m^3/s until July when it was increased to 23 m^3/s. Flow was reduced to 14 m^3/s in September, increased to 23 m^3/s in October and reduced again to 14 m^3/s the latter part of October continuing through the winter.

Lake of the Prairies (Shellmouth Reservoir) filled to an elevation of 426.91m in August from an April low of 424.44m. Outflow was reduced to 0.7 m^3/s in April. The flow was increased to 3 m^3/s, 8.5 m^3/s and 11 m^3/s during November. Outflow was again increased to 14 m^3/s on March 11 and 20 m^3/s on March 16. The flow was reduced to 3 m^3/s on March 31. The elevation of Lake of the Prairies on March 31, 1983 was 424.36m.

The spring runoff was adequate to replenish most reservoirs. Those that did not fill included Lake Minnewasta (Morden Reservoir) and Pleasant Valley.

B) Inter-governmental Water Management

1) Pembilier Dam

On July 15, 1982, a public meeting was held in Walhalla, North Dakota to discuss the findings of a study on the benefits attributable to the proposed construction of the Pembilier Dam. The U.S. Army Corps of Engineers indicated that the Pembilier Dam is not an economically feasible plan (B/C ratio = 0.5) and that a boundary floodway with diversion near Neche is only marginally feasible (B/C ratio = 1.5). The Corps' Phase I report on the project is currently under review by U.S. authorities.

2) Aux Marais and South Branch Buffalo Lake Boundary Problem

Improved drainage on North Dakota farmland which drains into Manitoba is considered to be part of a larger water problem experienced by landowners in both Canada and the United States in the vicinity of Gretna, Manitoba and Neche, North Dakota. Manitoba has asked that the project proposed by the international engineering group be considered in conjunction with the proposed Pembilier Dam on the Pembina River near Walhalla, North Dakota.

3) Garrison Diversion Unit

The Department continues to monitor proceedings with respect to the implementation of the Garrison Diversion Unit.

4) Hidden Island Coulee

The Water Resources Branch has been pressing the North Dakota State Water Commission to remove a dam that has been built on one branch of the Hidden Valley Coulee in North Dakota. It is feared the dam may cause increased flooding in Manitoba. The Commission is taking steps to resolve the problem.

5) Red River — International Study Proposal

The governments of Canada and the United States are considering asking the International Joint Commission to investigate and report on a number of issues relating to flood problems in the Red River Valley on both sides on the International Boundary. Investigations will include an examination of the effects of existing and proposed dykes or drainage facilities in the Red River basin on flood levels at the International Boundary. An evaluation of individual and collective effects of these projects on flooding in the country will be conducted and the identification of guidelines which would limit increases in flood levels to the country in which the project is located will be made.

Where any local or individual works may have adverse impacts in the other country, guidelines will be established for their construction to prevent, where possible, such adverse effects from extending into that country. Also to be determined will be the maximum feasible utilization of existing and proposed storage facilities in the basin for reducing flood levels at the International Boundary. Flood forecasting and warning systems will be developed and any international liaison and coordination necessary to improve them will be encouraged.

The proposed studies would take two years to complete. However, within one year of the start of the study, the IJC would be expected to provide an interim report identifying developments having significant impact on flooding.

6) Roseau River

The U.S. Army Corps of Engineers was advised that Manitoba would have to undertake a full environmental impact assessment (EIA) of the Roseau River flood control project and mitigation works on Manitoba before any work is initiated in the United States. The EIA would not be initiated before an agreement between the two countries is reached with respect to recovery of the costs associated with an EIA and the cost of any mitigating works or compensation required.

7) Lake Darling Dam

The U.S. Army Corps of Engineers is finalizing plans for raising the Lake Darling Dam, located on the Souris River upstream of Minot, North Dakota, by four feet to enhance its flood control capabilities. The Burlington Dam Task Force which reviewed the impacts of a similar project on Manitoba in 1979, has been reactivated to examine any impacts which could result from raising Lake Darling.

8) Pasquia Land Settlement Project

A multidisciplinary study concerning agricultural land reclamation in Polder 3 of the Pasquia and Carrot River Land Settlement Project was initiated in 1981 with joint participation from the Department of Agriculture, the Department of Natural Resources and PFRA. A September, 1981 progress report indicated that based on preliminary studies to that time, the agricultural reclamation of the Pasquia Lake area was feasible.

In the fall of 1982, the Department of Natural Resources and PFRA completed several remaining study items related to the proposed development of Pasquia Lake. The studies included the impact that drainage of Pasquia Lake and water retention in Big Lake would have on wildlife in the area and on the community pasture. As well, the Water Resources Branch investigated the feasibility of constructing an outlet from Big Lake directly to the Pasquia River in order to defer decisions on the development of the Big Lake area pending further study. Additional studies on soil salinity and groundwater in the Pasquia Lake area are planned for the summer of 1983.

Water Control Works

The Water Control Works Section establishes and monitors design, construction and maintenance standards for water control works. The actual construction is carried out on behalf of the Water Resources Branch by the Engineering and Construction Branch.

Reports were prepared on the anticipated effects of the proposed Holland Dam and reservoir on the geomorphology of the Assiniboine River. A similar study was completed on the observed effects of the Portage Diversion reservoir and on the sedimentation in Dauphin Lake.

The design of a fish ladder for the Fairford Dam was co-ordinated with the Fisheries Branch, the Engineering and Construction Branch, and the Freshwater Institute. The construction of the Rice Lake dam was coordinated with the Engineering and Construction Branch and the Department of Northern Affairs. Safety standards for barriers and guard rails were developed.

Staff continued to provide technical engineering and draughting services to the Department of Northern Affairs in establishing severance lines required under the Northern Flood Agreement. Draughting services were also provided to the Water Resources Branch and to other branches as requested. Data storage and retrieval and blue printing services were provided to the Water Resources Branch and the Engineering and Construction Branch.

In other activities, an annual report was prepared by the Dyking Commissioner on the maintenance and operation of the primary dykes within the City of Winnipeg. A comprehensive inventory of all water control works in the province was completed to aid in budgeting for maintenance and reconstruction.

Conservation Districts

A) Conservation Districts Authority

The Conservation Districts Authority was established by Order-In-Council 201/78 to provide for the administration and control of provincial grant funds to the conservation districts. These funds are provided to deal with such matters as drainage, flood control, soil conservation, water conservation, recreation, fisheries and wildlife management.

The grant funds provided to the five districts during the 1982/83 fiscal year were as follows:

Whitemud Watershed Conservation District	$ 730,644.04
Turtle Mountain Conservation District	160,992.62
Turtle River Watershed Conservation District	451,662.91
Alonsa Conservation District	210,114.00
Cooks Creek Conservation District	193,003.55
Administrative costs of maintaining the Conservation Districts Authority	5,969.66
	$1,752,386.78

1) Whitemud Watershed Conservation District

All resource studies have been completed in the Rat (Willowbend) Creek Watershed.

Engineering and economic studies examining flooding and erosion problems along the Big Grass River have been completed. Measures for wildlife mitigation and preservation in the project area have been examined. A report summarizing studies of a proposed double dyked floodway along the Big Grass River between Waldersee and the Big Grass Marsh has been completed.

2) Turtle River Watershed Conservation District

The feasibility of flood protection for the Village of Ste. Rose du Lac was investigated under the Canada-Manitoba Flood Damage Reduction Program and was determined to be economically feasible. Two feasibility studies involving drainage improvement were completed.

3) Turtle Mountain Conservation District

The Branch was preparing all pertinent resource data for the Turtle Mountain Conservation District.

A headwater detention structure (L-8) was constructed on the upper reaches of Medora Creek and is being monitored to determine its effect on reducing flood flows through Deloraine.

4) Alonsa Conservation District

The surface water management plan for the District was completed and preparation of the overall scheme is underway. One feasibility study involving drainage improvement was completed.

5) Cooks Creek Conservation District

The Branch is assimilating all pertinent resource, social and economic data for the Cooks Creek Conservation District. Two feasibility studies involving drainage improvement were completed.

B) **Provincial Flood Damage Reduction**

Through the application of Provincial Land Use Policy No. 11, the Province attempts to control development in areas subject to flooding, erosion, bank instability, landslides and subsidence. During 1982/83 approximately 800 subdivision applications were reviewed and input was provided for 10 planning documents. Twenty-five draft planning documents and 50 zoning by-laws were reviewed. In addition, individuals were advised on known and potential flood and erosion hazards.

Under Section 494.09 of the City of Winnipeg Act, the Minister may make an order varying the floodproofing criteria established by Manitoba Regulation 170/81. Twenty-three applications for variances were processed during the year.

Water Investigations — Hydrology

A) **Hydrologic Monitoring**

During the year an extensive network of streamflow and water level monitoring stations was maintained to provide accurate information on the surface waters of the province. Financial and technical input was provided to the federal government under the terms of the Canada/Manitoba Agreement for Water Quantity Surveys for operation of 308 hydrometric stations. A further 92 hydrometric stations were operated by the Branch for runoff monitoring and to facilitate activities like flow forecasting and operation of provincially controlled water control structures.

As a result of a combination of above normal soil moisture at freeze-up in 1981 and below average winter precipitation, the 1982 spring runoff was close to the median in most of southern Manitoba. Above normal spring runoff occurred in most of northern Manitoba. There were no significant flooding problems during the spring.

On the Red River, spring peak flows were somewhat above the median, mainly due to above median runoff in the United States portion of the basin. Spring peak flows were close to the median on the Assiniboine River. There was no spring flooding along the Red River or the Assiniboine River. However, flows were high enough to warrant the use of the Red River Floodway and the Portage Diversion for the duration of about one week in mid-April. On the Souris River, spring flows were well

above the median due to above normal runoff from the Saskatchewan and North Dakota portions of the basin. Flooding took place along the Souris River from the International Boundary to Hartney from mid-April to the end of May. However, there have been seven greater floods on the Souris River in Manitoba since 1968. On the Winnipeg River, flows increased from below average in April to above average in June. On the Saskatchewan River, at The Pas, flows were close to average during April and May and below average during June. Flows on the Churchill River and the Nelson River were near normal from April to June.

Flows on the Red, Assiniboine and Souris rivers increased to well above average in the late summer or autumn of 1982 due to well above average precipitation in July, September and October and above the average throughout the winter. Flows on the Winnipeg River were close to average during the summer and autumn and above average during the winter. On the Saskatchewan River and the Churchill River, flows were somewhat below average during the autumn and winter, while on the Nelson River, flows were slightly above average.

In early November, 1982, a soil moisture survey was conducted in the Red, Assiniboine and Souris river basins in Manitoba and Saskatchewan. The survey indicated that the soil moisture was generally above average. An antecedent precipitation index (API) was computed based on rainfall data from May to October, 1982. This index was generally between 115 and 140 percent of normal. The API was more than 150 percent of normal in extreme southwestern Manitoba and in a band stretching from Grandview to Norway House and was below average near The Pas and in the Churchill River watershed.

In February and March, 1983, snow surveys were conducted and winter precipitation data were analyzed in southern Manitoba and in eastern Saskatchewan. The February survey showed that snowcover was below average in the Assiniboine and Souris river watersheds and well below average in the Red River watershed. The March survey showed above average snowcover in the Assiniboine River, Dauphin River and Saskatchewan River watersheds and below average snowcover elsewhere.

There were no unusual difficulties due to low or high river flows in Manitoba during the summer and fall of 1982 and the winter of 1982/83.

B) Hydrometric, Hydrologic and Hydrometeorological Information

Precipitation maps were prepared each month and were distributed within the Department and to selected government agencies. Isohyetal analyses of storm precipitation were also prepared following each significant storm.

Recent data on water levels and streamflows for 31 lakes, 29 rivers and 7 reservoirs in Manitoba were compiled and distributed weekly to several hundred users within the public and private sectors. Information pertaining to climatology and hydrology was supplied to users on request.

C) Flow Forecasting

During the 1982 spring runoff period, daily forecasts of peak stages were prepared for various points along the Red, Assiniboine and Souris rivers from late March up to the date of the peak. Daily flood information sheets were prepared and distributed for the Red, Assiniboine and Souris rivers throughout the spring runoff period. Throughout the spring and summer, inflow forecasts were prepared for various lakes and reservoirs where control structures are operated by Manitoba.

During February and March, spring flood outlooks were prepared for the Red, Assiniboine and Souris river watersheds. In late March peak flow forecasts were prepared for an additional 62 smaller watersheds in Manitoba south of The Pas and peak stage forecasts were prepared for 6 lakes and reservoirs. Indications of relative runoff amounts were prepared for far northern Manitoba.

Data files required for flow forecasting were updated.

D) Canada-United States Joint Prairie Snow Cover Study

Analysis of the results of this experiment on the aerial measurement of snowcover by gamma ray and passive microwave techniques continued. No additional data were collected due to a lack of sufficient snowcover in the test area.

E) Wilson Creek

In September, 1981, most of the data collection program at the Wilson Creek Experimental Watershed was terminated. A "Summary Report of the Wilson Creek Experimental Watershed Study 1957-1982" was published in March, 1983. The report summarizes the data collection program and the research conducted on the watershed over the 25 year period.

Groundwater

Licences were issued to water well contractors and liaison with each contractor was maintained to ensure that all water wells were constructed properly. Technical advice was provided where requested. Groundwater exploration, development and water treatment investigations were carried out at the request of several government agencies who develop and maintain water supplies for municipal and domestic use. The greatest demand for these services came from the Manitoba Water Services Board and the community well programs of the Department of Agriculture.

Groundwater development investigations continued during the year involving the control of groundwater discharge in the South Lateral drainage system. Permanent control of groundwater discharge, which had caused severe icing problems, was attained by lowering water levels utilizing a system of relief wells. Investigations were also undertaken to evaluate individual groundwater discharge problems.

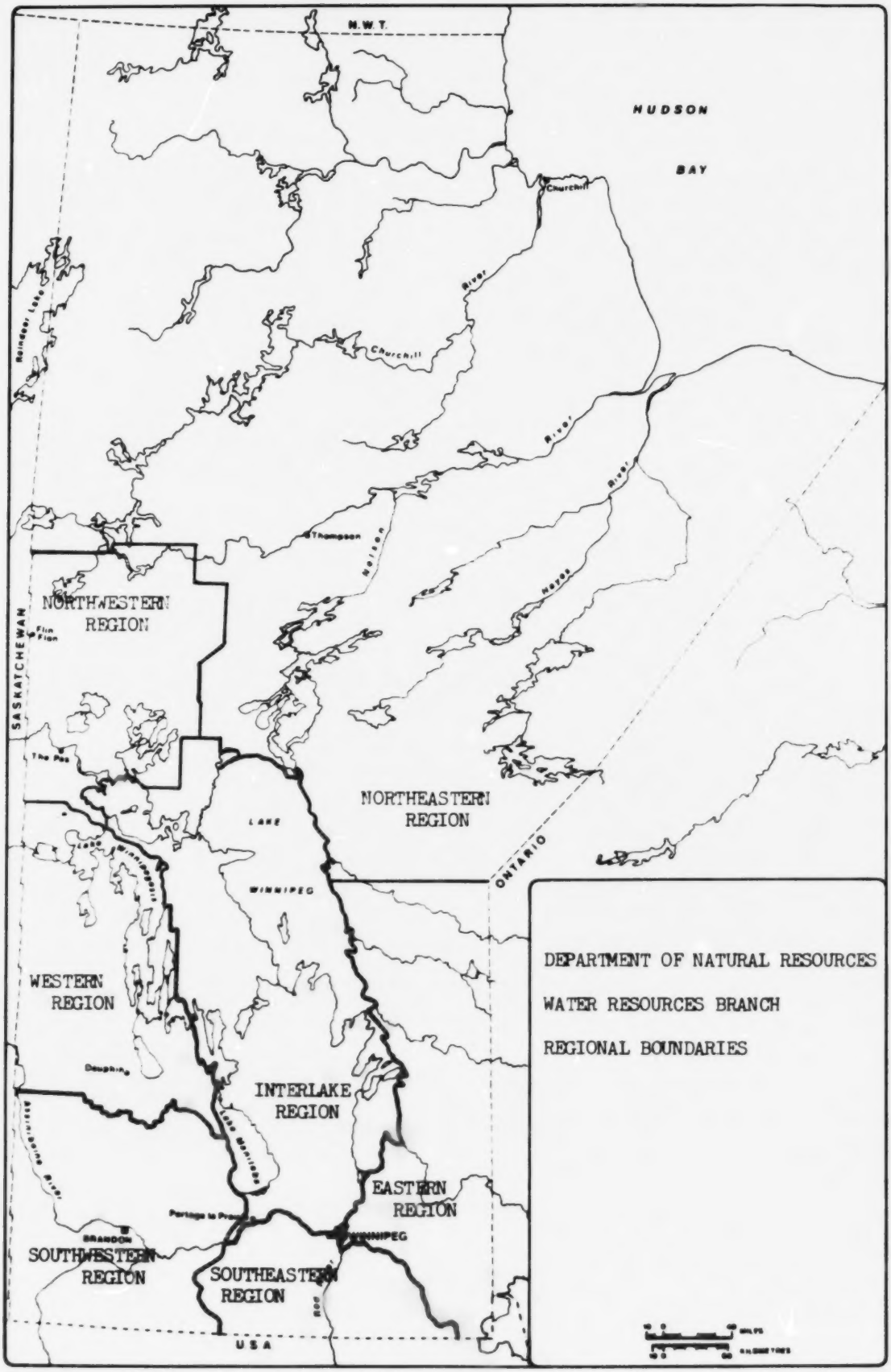
Groundwater management investigations continued in areas of intensive development such as near Winnipeg, Selkirk, Winkler, Carberry and Oak Lake. Each area has been established as an aquifer management area, and monitoring stations have been established to provide a continuous record of changes in water levels and water quality. Aquifer hydraulic studies utilizing already in-place irrigation wells were carried out in the Carberry and Oak Lake area. Evaluation of the aquifer conditions in the Selkirk and Winnipeg areas continued.

All groundwater data collected during the year were added to a permanent storage and retrieval system. Existing data were continuously updated to show the present and historical situation. Groundwater pollution hazard and groundwater availability appraisals were made on a continuing basis in response to requests from other government agencies. Background reports and groundwater development plans were prepared in response to several requests from the Department of Municipal Affairs. In addition, information was provided upon request to water well contractors, engineering consultants and private landowners.

Regional Water Management

There are seven regions in the province, each being serviced by a Regional Water Manager, the representative of the Water Resources Branch. However, the Eastern and Northeastern regions have been combined under one Regional Water Manager as have the Western and Northwestern regions. The other regions are the Interlake, Southeastern and Southwestern.

A summary of the 1982/83 work carried out in each region follows.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REGION
The Pas
NORTHEASTERN
REGION
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WESTERN
REGION
Dauphin
INTERLAKE
REGION
Lake Manitoba
Assiniboine River
EASTERN
REGION
Portage la Prairie
WINNIPEG
BRANDON
SOUTHWESTERN
REGION
SOUTHEASTERN
REGION
Red River
USA
DEPARTMENT OF NATURAL RESOURCES
WATER RESOURCES BRANCH
REGIONAL BOUNDARIES

Regional Summary of Water Control Works Conducted, 1982/83

INTERLAKE REGION

Flood Damage Reduction

Location	Cost
Portage Diversion	$ 152,324.39
Lake Winnipeg Dykes	18,999.15
Fairford River Dam	2,753.56
Delta Beach Cleanup	24,980.55

Land Drainage Maintenance

Watershed No.	Location	Cost
25	Long Lake Drain	$ 38,500.00
26	Sturgeon Creek and Adjacent Area	55,854.61
27	Grassmere Creek Drain	65,291.87
28	Parks Creek	17,726.67
29	Wavey Creek	47,489.92
30	Netley Creek	40,801.73
31E	Eastern Lower Interlake Area	59,600.00
31W	Western Interlake Area	30,537.20
32	Icelandic River	90,299.36
33	Fisher River	63,949.86
34	R.M. of Siglunes and R.M. of Eriksdale	9,408.81
100	Part of Assiniboine River	11,000.00
106	Washow Bay and Adjacent Area	17,290.94
108	North Shoal Lake and Adjacent Area	5,446.96
109	West Shoal Lake and Adjacent Area	2,993.15
111	Birch Lake and Adjacent Area	31,046.26
112	Gypsumville Area	4,361.80
Various	Appraisal Fees and Miscellaneous R.O.W. Costs	2,469.23

Land Drainage Reconstruction

Watershed No.	Location	Cost
26	East Branch Sturgeon Creek	$ 132,624.52
30	Ross Creek	65,000.00
31W	Swan Lake Drain	81,086.98
33	Kilkenny Drain	6,961.52
33	Plishka Drain	5,065.00

Water Allocation

Operation and Maintenance of Provincial Dams	$ 3,475.65

Bridge Replacement Program

Watershed No.	Location	Cost
29	NE 11-15-2E	$ 9,327.30
29	Wavey Creek E 2-15-3E	39,881.09
33	E 23-24-3W	17,169.87

EASTERN/NORTHEASTERN REGION

Flood Damage Reduction

Location	Cost
Red River Floodway Operation and Maintenance	$ 114,048.58

Land Drainage Maintenance

Watershed No.	Location	Cost
9	Lower Seine River	$ 10,976.14
10	Brokenhead River	58,129.62
13	Devils Creek	45,714.26
14	Catfish Creek	88,173.76
83	Lower Whitemouth River	819.86
86	Upper Whitemouth River	13,388.68
96	Lac du Bonnet Area	41,927.52

Land Drainage Reconstruction

Watershed No.	Location	Cost
10	Bachman West Drain	$ 107,711.17

Water Allocation

Operation and Maintenance of Provincial Dams	$ 5,391.30

Bridge Replacement Program

Watershed No.	Location	Cost
13	Devils Creek Drain NE 21-13-6E	$ 2,952.45
13	Devils Creek Drain NE 30-12-7E	44,087.82
10	Bear Creek in 14-13-8E	9,190.48

Other (Water Rights Act)

Backfill unauthorized Drain in Nopiming Park	$ 1,064.95

Value-Added Crops Production Agreement

Cooks Creek Project	$ 1,360.00

SOUTHEASTERN REGION

Flood Damage Reduction

	Red River Valley Town Dykes	$ 102,354.22

Land Drainage Maintenance

Watershed No.	Location	Cost
2	Lower Roseau River	$ 35,624.55
4	Lower Rat River	28,608.66
5	Marsh River	21,302.51
6	Tourond Creek and St. Adolphe Coulee	85,815.26
7	Manning Canal	37,887.85
8	Seine River Diversion	104,411.27
9	Lower Seine River	25,209.73
15	Rivière Aux Marais and Plum River	187,466.97
16	Shannon Creek	64,346.69
17	Tobacco Creek	84,202.85
18	Norquay Channel	35,131.82
19	Upper Morris River	44,141.89
20	King Drain	16,335.37
21	Elm Creek Channel	46,995.02
22	Lower La Salle River	41,408.42
23	Central La Salle River	48,425.73
24	Upper La Salle River	50,358.45
54	Mary Jane Creek	209.50
71	Cypress River	966.82
87	Upper Roseau River	14,544.60
Various	Appraisal Fees and Miscellaneous R.O.W. Costs	1,551.83

Land Drainage Reconstruction

Watershed No.	Location	Cost
7	E 5,8,17,20-7-5E	$ 230,825.84
16	South Branch, Shannon Creek	231,194.37
16	North Branch, Shannon Creek	197,924.98

Water Allocation

Location	Cost
Operation and Maintenance of Provincial Dams	$ 29,365.65
Stephenfield Lake	40,015.21

Water Development Agreement

Location	Cost
Lake Minnewasta-Morden Dam	$ 142,890.24

Bridge Replacement Program

Watershed No.	Location	Cost
2	Arbakka Drain NE 8-1-8E	$ 18,029.47
2	Vita Drain NE 21-2-7E	32,594.60
2	Vita Drain In 10-2-8E	4,946.30
2	NE 1-2-9E	8,928.00
4	R.L. 95 St. Malo Settlement	10,211.15
4	R.L. 44 Rat River Settlement	9,119.35
4	Joubert Creek Extension NE 2-4-7E	8,479.45
15	E 25-1-1E	46,404.98
15	South Branch Buffalo Lake Channel E 27-1-3W	10,081.00
15	Plum River N 15-3-1E	4,518.52
16	Kronsgart Drain — Various	19,457.89
16	South Shannon Creek E 36-4-2W	41,153.30
17	E 5-5-1E	1,229.44
17	4N Dykes E 11-6-4W	25,183.84
21	Crooked Lake Channel E20-10-5W	15,102.53
21	Elm Creek Channel NE 4-10-4W	31,460.13
87	Pine Creek Diversion NE 7-1-12E	3,336.17

Value-Added Crops Production Agreement

Project	Location	Cost
Domain Drain Crop Area	Domain Drain	$ 65,699.35
La Salle River Area	E 5-9-1W & E 32-8-1W	200,960.90
	Upper Bryson Drain	473,992.47
Morris River Area	Roberts/McTavish Drains	136,149.58

SOUTHWESTERN REGION

Land Drainage Maintenance

Location	Cost
Various Watersheds	$ 8,872.88

Water Allocation

	Cost
Maintenance of various Provincial Dams	$ 15,087.51

WESTERN/NORTHWESTERN REGION

Flood Damage Reduction

Location	Cost
Shellmouth Dam	$ 12,211.62

Land Drainage Maintenance

Watershed No.	Location	Cost
44	Wilson Creek	$ 846.16
47	Vermilion River and Edwards Creek	108,301.34
48	Wilson River	26,221.38
49	Fishing River and Mink River	70,792.65
52	Lower Roaring River and Favel River	4,173.35
53	Lower Swan River and Sinclair River	38,598.14
61	Upper Swan River and Lobstick Creek	9,299.52
89	Upper Woody River	14,061.32
90	Lower Woody River	28,607.39
95	Lower Valley River	10,486.61
97	Bell River	19,352.23
102	Fork River	10,697.73
103	Garland River	9,977.81
104	Pine River	25,890.65
105	Sclater River and Duck River	17,325.96
107	Hamlin Drain	422.49
114	Pasquia Area	146,416.97
115	Steeprock River	1,490.25
Various	Appraiser Fees and Miscellaneous R.O.W.	18,472.82
114	Emergency Repairs and Pumping at Mile 14 Pumping Station	15,184.96
Various	Flood Damage Repairs (July 17, 1982 Rainfall)	15,837.44

Land Drainage Reconstruction

Watershed No.	Location	Cost
49	Fishing River	$ 41,643.21
53	Craigsford Drain	190.00
61	1&12-36-28W, 6-36-27W, 30-35-27W	109,126.75
102	South Bay Drain	17,124.22
114	Pasquia Settlement	148,923.73

Water Allocation

Location	Cost
Operation and Maintenance of Provincial Dams	$ 74,422.46
Maintenance of Summerberry River Marsh	25,856.77
Maintenance of Grace Lake Dykes	2,934.72

Water Development Agreement

Location	Cost
Grandview Dugout and Pumping Works	$ 97,083.56
Edwards Creek Reservoir	120,669.80

Bridge Replacement Program

Watershed No.	Location	Cost
49	Mink Creek E 25-28-19W	$ 55,237.93
53	Swinowski Drain E 28-36-25W	12,689.70
95	NE 27-26-20W	8,671.64
102	19-30-18W	11,937.73
104	Pine River Drain N 33-32-22W	5,469.38

Canadian-Manitoba Flood Damage Reduction Program

The governments of Canada and Manitoba signed three agreements on December 20, 1976 with the aim of reducing over the long term the ever-increasing potential for flood damages in Manitoba. These were the General Agreement, a Flood Risk Mapping Agreement and a Flood Damage Reduction Studies Agreement. In March of 1981, an Agreement Respecting Flood Forecasting was also signed.

Under the Flood Risk Mapping Agreement, flood risk areas were designated along the La Salle River within the communities of La Salle, Sanford and Starbuck on November 26, 1982. A comprehensive public information program was conducted prior to and following the designations. Maps and brochures were produced and distributed to the general public and to numerous government agencies. Meetings were held with the local governments and the general public.

Base maps were completed for Arborg, Fisher Branch, Gladstone, La Riviere, Riverton, Westbourne and Woodside. Preparation of basemaps is underway for The Pas. Aerial photography for Virden was unsuccessful and will have to be obtained again in the spring of 1983. River channel cross-section surveys were completed for Lorette and Ste. Anne.

Hydrologic studies were carried out for Neepawa and were underway for Arborg, Fisher Branch, Lorette, Riverton and Ste. Anne. Hydraulic studies were undertaken to allow final designation in Dauphin, Starbuck and Swan River. Studies for Morden were underway and studies for Arborg, Fisher Branch, La Riviere, Lorette, MacGregor, Minnedosa, Neepawa, Riverton and Ste. Anne were initiated. The hydraulic study for Ste. Rose du Lac was postponed until a decision is made on when the flood protection scheme will be undertaken.

A re-analysis was done of the floodway zone of the Red River in the St. Vital area of Winnipeg subsequent to new topographic information being acquired. As a consequence of this, the floodway zone was reduced in size and a map showing the change was distributed to government agencies and to landowners in the area.

Pre-designation meetings were held with the local councils of Dauphin, Neepawa and Riverton. A public meeting was held in Carman. As part of the public information program following the designation of Brandon on March 26, 1982, a drop-in centre was conducted in Brandon on April 1, 1982, and the Flood Damage Reduction display was set up in a shopping mall on April 2 and 3.

Under the Flood Damage Reduction Studies Program, the examination of the feasibility of upgrading the existing dykes in Brandon and in Ste. Rose du Lac was completed. The benefit/cost ratio was near unity for Brandon and greater than unity for Ste. Rose du Lac. The flood damage reduction study of Souris was completed with the recommendation that the dyke around the water treatment plant be upgraded to the design flood standard. A preliminary study examining the proposed diversion around Gimli was completed. It was found that the project had a low benefit/cost ratio.

Under the Flood Damage Reduction Program, the Province and the Federal Government signed an agreement on March 10, 1983 for the upgrading of the ring-dykes of eight communities in the Red River Valley. The eight communities are Emerson, Letellier, Dominion City, St. Jean Baptiste, Morris, Rosenort, Brunkild and St. Adolphe. The total cost of the agreement is $4.5 million with Canada's share being 45% and the Province's share being 55%. Agreements between the Province and each municipality will be entered into requiring each municipality to provide five percent of the construction cost involved in upgrading its dyking system from the level required to protect against the 1950 flood level to that required to protect against the one percent flood level. The municipalities will also be required to contribute 25% of the annual operation and maintenance costs associated with their dyking systems.

As part of an effort to update flood stage-damage curves, Manitoba Disaster Assistance Board flood damage data for the 1979 flood were collected and a consultant hired to analyze the data.

Under the Flood Forecasting Agreement, three conceptual-deterministic type hydrologic models were selected for detailed evaluation in the pilot project conducted on the Boyne River. These include the very complex Hydrologic Simulation Program-Fortran (HSPF) model, the moderately complex Streamflow Simulation and Reservoir Regulation (SSARR) model, and the relatively small Simple Linear Unit Reservoir Program (SLURP). These models were mobilized. Time series data required to calibrate the models were prepared. These data sets cover the period from 1969 to 1979. Calibration of the models was begun. A dynamic one-dimensional stream channel routing model was mobilized and tested on portions of the

Boyne River. Kinematic channel routing procedures were reviewed. Four electronic hydrometric climatological stations with electronic data collection and real-time data transmission facilities were installed and tested.

Canada-Manitoba Subsidiary Agreement on Value-Added Crops Production

This federal-provincial agreement, signed on April 1, 1979, provides for a variety of demonstrations and investigations to increase the production of value-added crops and to improve the production of forage crops and maximize their feed value. The cost of a number of projects in Manitoba is being shared under this agreement. The Almassippi Wet Sands Management Project, for example, involves test drainage installations and field crop trials for the Almassippi sands area between the Manitoba Escarpment and the clay plain to the east. Contracts have been entered into with the University of Manitoba and an engineering consultant to carry out water management studies in these areas. These studies have recently been completed.

A) **Domain Drain Area Crop Demonstration**

In the Domain Drain Area Crop Demonstration Project area, the Domain Drain and the Manness Drain watersheds, located adjacent to each other, have been instrumented with seven standard rain gauges, a recording rain gauge and two stream gauges. The objective is to determine the effects of drainage installations and land use on the runoff regime and, hence, to quantify the benefits of drainage. Daily streamflow data were collected for two hydrometric stations. Temperature and humidity data was recorded at four stations. The data provided by the instruments will demonstrate the effects of drainage installation and land use on the runoff regime in addition to the prime objective of providing hydrologic data for use in quantifying benefits from agricultural drainage.

The intention of this project is to make changes in one watershed while leaving the other intact to act as a statistical "control." Data have been collected since June, 1981. Construction of the major drainage works (Provincial Waterways) associated with the project is complete. Cost-sharing agreements for the construction of the minor drainage works (Municipal Drains) are currently being negotiated.

B) **Wilson Creek**

In 1980 two rockfill weirs were constructed on Wilson Creek. Their purpose was to demonstrate the effectiveness of energy dissipation structures in reducing erosion of the alluvial fan at the base of the escarpment. Streambed changes are being monitored and a final report assessing the results will be prepared in 1984.

All groundwater data collected for the Wilson Creek watershed are being compiled and reviewed in an attempt to better understand the escarpment groundwater system. Erosion control studies continued in the Wilson Creek watershed.

C) **Four Major Area Projects**

Cooks Creek Area Project, Marsh River Area Project, La Salle River Area Project, and Morris River Area Project will provide for improved drainage of up to 137,600 hectares of cropland. Drainage system optimization studies for these projects were initiated in 1980. Anticipated completion for all projects except Cooks Creek is 1984.

A formal agreement between the Province and the Cooks Creek Conservation District Board was signed by the Board for the Cooks Creek Diversion in connection with the Cooks Creek Area Project. Final recommendations have been made regarding the drainage standard and the diversion capacity. Detailed design of the project is underway. An environmental impact review of the proposed diversion has been initiated. The project will require several more years to complete.

Studies and plans are underway for upgrading five independent drainage systems for the Marsh River Area Project. One of these is the Lafond Drain, for which preliminary designs of the provincial and municipal drainage systems were completed. Surveys were completed for the Aubigny Drain and design of the provincial and municipal channels was completed.

Two projects of the La Salle Area Project are underway: the Mills-Wheatland System and the Upper Bryson System. In the Mills-Wheatland System, the provincial waterway reconstruction was completed and nearly ten kilometres of municipal drains were improved. Designs and construction drawings for the Upper Bryson System were completed. Some materials were purchased and right-of-way purchase commenced. Several major culvert crossings and a flow control structure were installed in the Upper Bryson System. One earthwork contract has been awarded for the reconstruction of a portion of the Provincial Waterway.

Drain designs and construction drawings were completed for the Roberts-McTavish System which is part of the Morris River Area Project. The major portion of the right-of-way for the provincial drains has been purchased. Some culverts have also been purchased.

Canada-Manitoba Interim Subsidiary Agreement on Water Development

An Interim Subsidiary Agreement (under the General Development Agreement) on Water Development for Regional Economic Expansion and Drought Proofing was signed by Canada and Manitoba on May 30, 1980.

The programs under this agreement come under two broad sectors, water management and water supply.

A) **Water Management**

Water management activities were being undertaken which focussed on the development of a long-term strategy for water development and drought proofing based on a sound knowledge of drought and its characteristics.

1) Drought Proofing Studies

Drought proofing studies were being carried out under contract with the University of Manitoba to define the economy of Manitoba as it relates to agriculture and to compute the impact of a drought on the economy. Four mathematical models concerning dryland agriculture, irrigated agriculture, municipal water supplies, and water endowment modifications were developed to simulate Manitoba's agricultural economy. The simulation of historical conditions using these models will provide a basis for assessing the impact of selected drought and water endowment conditions on Manitoba's economic performance. Several elements of the modelling studies have been completed and others are nearing completion.

A preliminary study was also carried out to investigate the potential merits and costs of including in the models the capability of analyzing farming practices which could lead to improved soil moisture conditions. These practices, referred to as a conservation scenario, would effect greater retention and conservation of snowcover, which in turn would lead to improved soil moisture conditions. The preliminary study indicated that conservation practices could be highly desirable in the near future, particularly since they would facilitate the growing of winter wheat. On this basis, a decision was made to include the conservation scenario in the models and this action has been initiated.

These models will be used to evaluate programs and projects that will reduce the social and economic impact of drought. Following these studies, a long-term water management strategy will be developed and recommended for consideration by the two governments.

2) Water Management Investigations

During negotiations leading up to the Agreement, it was agreed that one area of Manitoba which required early attention, insofar as improving water supplies is concerned, is the Assiniboine South-Hespeler area. This area, located south of the Assiniboine River and west of the Red River to the Pembina Hills, has the climate required for special crop production but lacks adequate supplies of both groundwater and surface water.

Investigations were undertaken to determine whether it would be economically feasible to divert water from the Assiniboine River to this area. The scheme would involve construction of the Holland Dam on the Assiniboine River between Portage la Prairie and Brandon, a pumping weir and pumping station on the Assiniboine River and a canal to deliver the water to the proposed irrigable area. The Manitoba Soil Survey has recently completed a review of the irrigation drainage requirements. The economic evaluation of the irrigation project is being reviewed by PFRA. An assessment of the impacts of the proposed project on various aspects of the environment is being prepared. Studies into the costs of the principal engineering works continued.

3) Water Resource Development

The data base to produce a series of maps defining aquifers in the Virden map sheet area has been prepared and a field testing program to provide an adequate data base to define aquifers in the Hecla map sheet area was carried out.

Groundwater monitoring systems were operated in each of the aquifer management units at Elie, Winkler, Miami, Glenora, Carberry and Oak Lake.

A water transfer system was put in place to enable an artificial recharge project involving the addition of surface water to a gravel aquifer near Elie to be carried out in the spring of 1984.

B) **Water Supply**

1) Pipestone Creek

Streamflow along Pipestone Creek in Manitoba has often been insufficient to satisfy the requirements of water users during dry periods. Studies to determine the extent and location of existing and projected demands for water in this area and of measures to supply this water are being undertaken. The Prairie Farm Rehabilitation Administration (PFRA) recently completed a draft interim report identifying several proposals to augment the water supply along the Pipestone Creek in Manitoba. A review of this report indicated that there is

adequate groundwater available and that providing wells is the least costly alternative for satisfying existing demands other than irrigation.

2) Boyne River Study

A study considering the most suitable alternatives for alleviating present water shortages and meeting future water demands along the Boyne River was undertaken by PFRA in cooperation with the Water Resources Branch. An interim report concerning the provision of additional upstream storage to meet Carman's winter demands and the provision of low head weirs downstream from the town for users along the river, was expected to be completed in early 1983. A report addressing the long-term demands will be undertaken following completion of the interim studies.

3) Altona Water Supply

In cooperation with the Water Resources Branch, the PFRA has completed a report on a proposal to build a storage reservoir on the Buffalo Lake Channel which would provide the additional capacity needed to satisfy Altona's water supply requirements for the next 10 to 20 years. Discussions of this proposal were underway with the Town of Altona and Rural Municipality of Rhineland. At a meeting involving officials from Altona, the R.M. of Rhineland, PFRA and the Water Resources Branch, it was agreed that an independent study would be undertaken into the feasibility of constructing a water treatment plant in association with the project.

The project proposal has been submitted for screening by the Manitoba Environmental Assessment and Review Agency. It is expected that an environmental impact study will not be required.

4) Morris Water Supply

The Town of Morris is upgrading its treated water storage and distribution facilities to provide for future needs. The Town Council had requested that a weir be constructed across the Red River downstream of the intake to ensure an adequate depth of water over the intake at all times. A preliminary engineering report, recently completed by PFRA, indicated that the high cost of the weir and the additional costs of works needed to provide for navigation and fish movement would make construction of a weir on the Red River too costly. Furthermore, the report indicated that the water treatment facilities at Morris will provide sufficient treated water to meet the 1999 projected demands when the treated water reservoir and other works now under construction are put into service.

5) Rural Municipality of Franklin

A project proposal to determine the feasibility of developing a groundwater source in the Springbank area to meet municipal and domestic requirements for Dominion City, Emerson and rural residents of the R.M. of Franklin was considered. A preliminary appraisal of groundwater availability to meet these requirements was completed and the costs of aquifer exploration were defined.

6) Multiple-Purpose Water Supply Projects

Several projects have been designated for early construction. These include raising the Morden Dam, rehabilitation of the Edwards Creek water storage facilities, construction of a water supply dugout at Grandview and construction of a pumped diversion from the Assiniboine River to the La Salle River Basin.

At the Morden Dam, a low level intake has been constructed and the dam has been raised by more than two metres. Beach rehabilitation and minor cleanup work has also been completed. The Grandview and Edwards Creek projects have essentially been completed and an inspection will be carried out this spring.

Current plans for operation of the Assiniboine-La Salle Diversion project are to divert a total of 1.4m^3/s from the three pumped diversion facilities from May to October with a maximum diversion of 2.8 m^3/s. It is intended to operate one pumping station at partial capacity during the winter as well. Construction of the project, if initiated in 1983, could be completed by 1984. Planning and consultation regarding the water control works involved was carried out with the affected municipalities.

Engineering and Construction Branch

Engineering and Construction Branch

Responsibilities:

Provides engineering, construction and technical support services to all branches of the Department, municipalities, conservation districts and other government agencies; provides accounting, administrative and purchasing services to the conservation districts; operates all flood control works under provincial jurisdiction during flood emergencies; and coordinates all flood fighting.

Regional Engineering Services

Regional Engineering Services provides a variety of engineering services to other branches of the Department and to other agencies. These services include field investigations and studies, project management, construction supervision and technical advice.

The Province is divided into five regions, each headed by a Regional Engineer and supported by professional, technical, and other staff. A Construction Coordinator is responsible for the coordination with other branches and agencies in determining proposed programs and activities. A Maintenance Coordinator establishes maintenance standards and procedures for engineering works within the Department.

Following is a brief summary of the major activities of Regional Engineering Services in 1982/83.

1. **Eastern Region**

Engineering and Construction Branch survey crews completed several projects for the Water Resources Branch, the Cooks Creek Conservation District and various local government districts and municipalities in the region. Reconstruction work continued along the South Lateral Drain and the Branch replaced eight major drain crossings. A dam was constructed on the outlet to Rice Lake near Bissett. Regular maintenance work was conducted on the various provincial waterways and flood control works in the region.

A number of projects were conducted on the behalf of the Parks Branch. At West Hawk Trailer Village, the electrical service and the sewer and water service were replaced. A back-up water supply was installed and the sewage lagoon was completed. Installation of a sewer and water system for the Falcon Staff Trailer Village was begun. At Toniata campground in the Whiteshell, a water supply system was installed. Sewer and water was installed at the Grand Beach Hotel and park administration building. Construction of the Beresford Lake campground began. At the Paint Lake cottage subdivision, the water system was upgraded and other construction work was completed. In other Parks Branch activities, three wells were drilled, three shower-washrooms were completed and a boat channel was constructed at MacKenzie Bay on West Hawk Lake.

Two major projects were undertaken on behalf of the Forestry Branch. The Rice River road was extended an additional six kilometres and at Hadashville, two greenhouses and a heater house were constructed for the Pineland Forest Nursery.

2. **South Central Region**

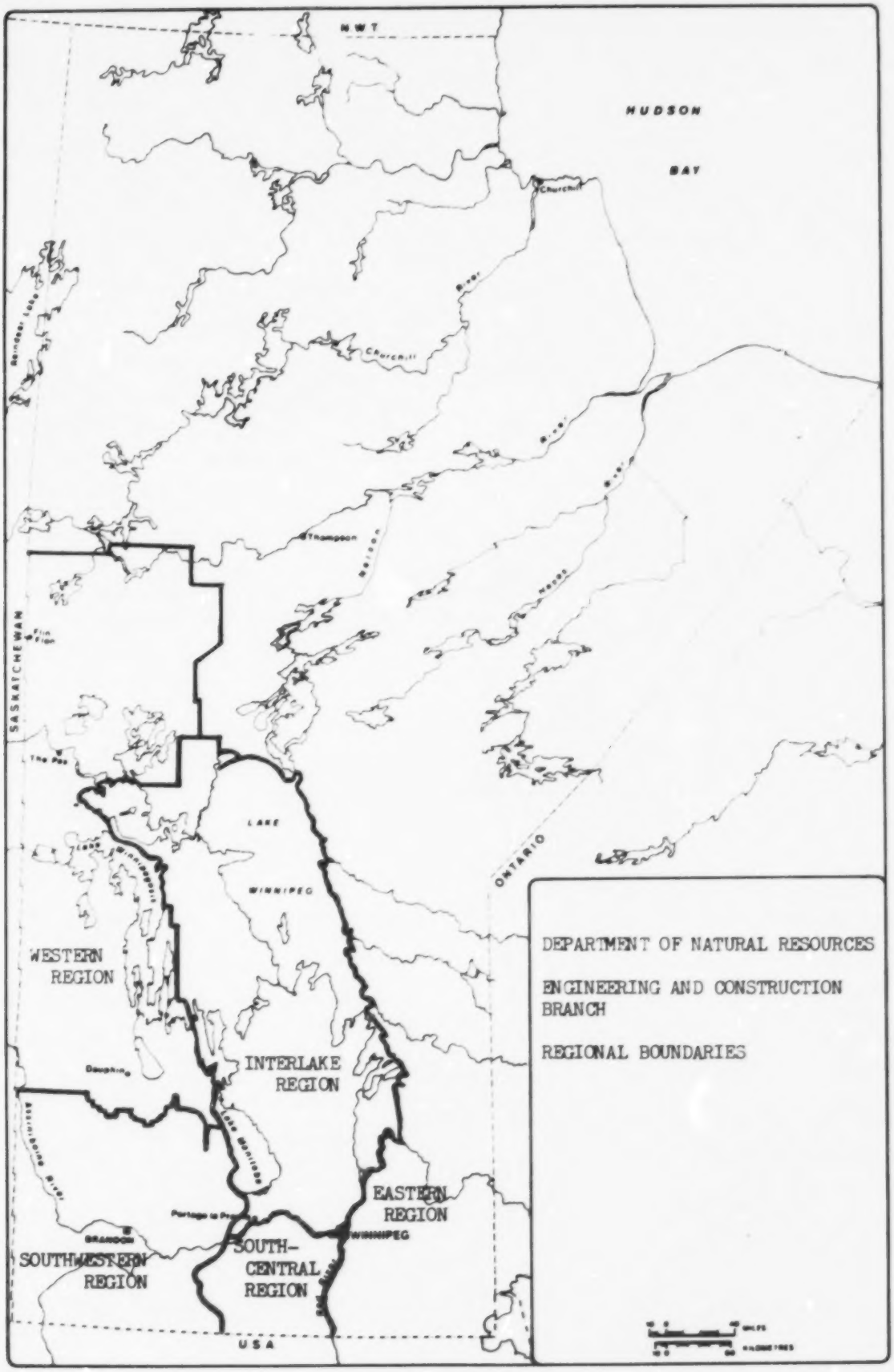
Under the General Development Agreement, the Domain Drain was seeded to grass and all culverts were rip-rapped. The construction of the Mills-Wheatland Drain was completed. Nine large culvert crossings were installed on the Upper Bryson system. Plans were completed and right-of-way purchased for the reconstruction of the North Bryson Drain and the Interceptor "A" lateral drain. Construction is expected to be completed during the summer of 1983.

Under the Water Resources Capital Construction Program, one major earthwork project was completed and four culverts were installed on South Shannon Creek. A bridge was constructed on North Shannon Creek as well. Culverts in the Upper Elm Creek Channel at PR #338 were installed by the Department of Highways under this program.

Under the Bridge Replacement Program, new culverts were installed at two locations, one ford crossing was built and a bridge deck was asphalted. Two new bridges were constructed, one on Shannon Creek and the other on Rivière Aux Marais.

Major repairs to the Stephenfield Dam initiated in 1981 were completed by October, 1982. A diversion was constructed from the La Salle River to a gravel aquifer in the Elie area to enhance water supplies. Survey levels were provided for 50 permits in the Red River Valley Designated Flood Area.

In other activities, services were provided to the Department of Cultural Affairs relating to the restoration of Bohemier House south of St. Norbert. A sewage stabilization pond was constructed for the Manitoba Water Services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SOUTHWESTERN
REGION
USA
DEPARTMENT OF NATURAL RESOURCES
ENGINEERING AND CONSTRUCTION
BRANCH
REGIONAL BOUNDARIES

Board at La Salle. Regional staff received 94 requests from municipalities for engineering services and completed nearly 90% of the field surveys required.

The Region also conducted, on behalf of the Water Resources Branch, all maintenance, operations, and reconstruction programs for all provincial works, including five Red River Valley town dyking systems.

3. **Southwestern Region**

Drainage programs for the Turtle Mountain and the Whitemud River conservation districts were carried out and engineering services were made available to municipalities and local government districts in the region. Extensive investigational surveys were conducted for the Pelican Lake control project.

Parks Branch projects included renovation of the sewage lagoon and additions to the water distribution system at Rivers Park, a new pumphouse at Lynch Point, electrification of the winter recreation facilities at Spruce Woods and paving of a number of roads at Spruce Woods.

A new wayside park was established on the Assiniboine River at PTH #34 complete with washroom, water supply and boat ramp. Also on the Assiniboine River, works were initiated on a new park in the Rural Municipality of Cornwallis.

4. **Western Region**

Water Resources Branch programs consisted of maintenance of Provincial Dams and Provincial Waterways, Provincial Waterway reconstruction and bridge replacement. Major activities under the maintenance program included replacement of guardrailing and catwalk on the Ste. Rose Dam, erosion control on Edwards Creek, brushing on Mink River dykes, leveling of dragline dumps on Fishtown Creek, major bridge repair on the Keld Drain, cleanout of B-1 Drain on the Pasquia Project and operation of pumping stations in the Pasquia Settlement. Reconstruction activities included final cleanup on the Fishing River and South Bay Drain Projects, channel construction and crossing replacement on the Silent Creek and channel improvements to the Bon Drain, 7A Drain, Drain N, Ph #282 Drain and Drain 03 in the Pasquia Land Settlement. Bridge replacements were carried out on the Harrington Drain, Small Creek, Mink Creek, Pine River Drain and Swinowski Drain. Services were also provided to the Alonsa and Turtle River conservation districts. Major projects included reconstruction of Hansen Creek, Kergwenan Drain and Lonely Lake Drain.

A number of projects were conducted for the Parks Branch. Works were undertaken at three sites in the Duck Mountain Provincial Park under the Northlands Agreement. A water supply system was completed at Wellman Lake, a trailer dump station and pumphouse building were constructed at East Blue Lake and electrical service was installed for 37 campsites at Childs Lake. At Bakers Narrows, electrical service to 16 campsites was completed and a sewage lagoon installed. Water facilities were upgraded at Asessippi and the campground expansion at Rainbow Beach included the completion of three buildings, installation of sewer and water systems and electrical service for these facilities.

Services for the Forestry Branch centered around the development of the Clearwater Lake Nursery. The major projects involved site clearing, erecting a chain link fence around the perimeter, drilling a well, constructing two greenhouses and one service building including provision of water and electrical service, and relocating a temporary bunkhouse. Work was also started on the office building.

In other activities, preliminary surveys were conducted on behalf of the Fisheries Branch for the development of a fish hatchery on Lake Winnipegosis and pickerel rearing ponds at Methley Beach. The Region provided project management for the construction of a two-cell lagoon at Grandview for the Manitoba Water Services Board. A site investigation for development of a water supply dugout near Waterhen was carried out for the Department of Northern Affairs.

5. **Interlake Region**

A major portion of the workload was related to Water Resources Branch projects. Major surveys and investigations were undertaken for the Fisher River watershed study, for flood damage reduction studies at Riverton and Arborg and for continuing studies of the Dennis Lake Project. Capital works were conducted on six projects including Ross Creek, Swan Lake Drain and the East Branch Sturgeon Creek project. Maintenance programs were conducted on provincial waterways including structures, bridges and dams. Under the Flood Damage Reduction Program, flood control systems on the Portage Diversion were also maintained and operated. Engineering services relating to Water Resources Branch activities were made available to all municipalities and local government districts in the region.

Parks Branch projects for the year included completion of the Portage Spillway Wayside Park, upgrading of Grindstone Park access

road, construction of a new sanitary landfill on Hecla Island, and improvements to facilities at Winnipeg Beach and Blacks Point cottage subdivision. Pre-construction investigations and surveys were initiated for a new shower building at Hecla Island, a marina at Gull Harbour, and campground development at Camp Morton.

Interlake Region continued to have a heavy commitment to Wildlife Branch projects during 1982/83. The most intensive activity was centred around construction of visitor services parking areas, roads, trails, boardwalk, washrooms, picnic shelter and viewing areas, roads, trails, boardwalk, washrooms, picnic shelter and viewing areas at Oak Hammock Marsh. Engineering services and surveys were also provided for the proposed wood bison re-establishment project near Waterhen Lake, and for projects in the Lundar and Broad Valley wildlife management areas. In addition, preconstruction engineering commenced for an extensive water supply/management project proposed for Oak Hammock Marsh in conjunction with Ducks Unlimited.

On behalf of Fisheries Branch, preconstruction engineering was undertaken on a fishway installation project slated for the Fairford Dam.

Services were also provided to other agencies including Department of Agriculture, Department of Northern Affairs and Travel Manitoba.

Technical Services

Throughout the year, the Technical Services Section provided a broad band of paraprofessional and professional engineering services in designing projects and preparing engineering drawings for these projects. Services were also provided in the areas of geotechnical needs, specialized construction supervision, materials selection and in preparing specifications. Professional guidance, inspections and modifications dealing with maintenance problems were also provided. A number of feasibility studies were also conducted on behalf of other branches of the Department.

The Section provided expertise in the fields of hydraulics, structures, sewer and water systems, geotechnology and materials. Electrical and mechanical services were available on a retainer basis from the private sector.

The Section was involved in a variety of projects, including greenhouse construction at Clearwater and Pineland nurseries. Feasibility studies for a fish hatchery gave rise to a proposal that saw the Portage Diversion being used most successfully as a fish-rearing facility. Design of Parks Branch facilities, floodways, dams and similar works were provided as required.

A typical example of Technical Services involvement in a Department project was the Cooks Creek Diversion. At the request of the Cooks Creek Conservation District, Technical Services combined field data from the Regional Engineers concerned, geotechnical investigations, hydrologic and cost/benefit input from Water Resources together with Technical Services expertise in hydraulics, hydraulic structures and drafting to produce right-of-way plans and contract documents for this project.

Contracts and Administrative Services

The Contracts and Administrative Services Section is required to maintain an effective expenditure control and cost reporting system related to all projects undertaken by the Branch.

All accounts for projects carried out by the Branch are processed by this section. Liaison is maintained with other branches to provide direction in policy and procedure matters regarding Branch activities. The Section administers all contracts and construction orders and conducts functions related to land acquisition for Department construction works.

During the year 35 major contracts and construction orders were issued and administered. Although interest rates declined somewhat during the year, contracts were nevertheless closely monitored to ensure contractors were promptly paid. Thus holdback interest charges payable by the Province are kept to a minimum. Three consulting engineering firms were contracted to assist in feasibility studies and design work on Water Resources Branch and Parks Branch projects.

During the year 1600 hay permits were issued on 3000 km. of provincial waterways. Approximately 750 title searches were conducted in the preparation of right-of-way plans and land purchases Also, 242 easements were processed concerning telephone and hydro transmission facilities, 85 land transactions concerning land purchases, legal survey requests and the recording and dispatch of completed surveys were executed. Additionally, 20 consents-of-entry were processed, as were 446 equipment rental agreements. An accounts subsection was heavily committed as a result of these functions. Inventory counts at 18 material yards in the province were completed.

Fisheries Branch

Fisheries Branch

Responsibilities:

Develops and implements fisheries management programs designed to maintain or enhance fish populations in the province; monitors the effects of fishing and habitat alterations on fish populations; operates and administers the provincial fish hatcheries to increase and/or sustain fish resources in Manitoba; allocates and administers the fishery resource to maximize economic returns to Manitobans and administers the Northern Fishermen's Freight Assistance Program.

Commercial Fishing

Many marginally viable commercial fishing operations in the north continue to operate with the help of the Northern Fishermen's Freight Assistance Program. For the summer of 1982, payments of more than $198,000 were made to 568 commercial fishermen. Payments for the winter season of 1982/83 were made to 112 fishermen and totalled more than $39,000.

The Northern Fishermen's Assistance payments are now being made by the Freshwater Fish Marketing Corporation on behalf of the Province of Manitoba thus providing more prompt payments to fishermen. The current subsidy levels are under review and may be adjusted based on the conclusion of that review.

The Lake Winnipeg Licensing Review Board, composed of commercial fishermen and Department representatives met prior to each season on Lake Winnipeg and heard 19 eligibility appeals. The Board's recommendations were forwarded to the Minister of Natural Resources.

Regular meetings continued with the Lake Winnipeg Commercial Fisheries Management Advisory Board, the Lake Winnipegosis Commercial Operators and Fishermen's Association and the Lake Manitoba Commercial Fishermen's Association. These organizations provide a means for commercial fishermen to contribute to the management of the fisheries industry.

A fall commercial fishery in the Mossy Bay area of Lake Winnipeg was granted to Norway House and Warren Landing residents allowing the harvest of 68,000 kilograms of fish. Norway House and Warren Landing fishermen last fished Mossy Bay in 1958. Negotiated agreements were reached with Grand Rapids and Big Black/Poplar River fishermen to conduct experimental fall seasons in their areas. At Grand Rapids, 44 fishermen were allowed to harvest 3810 kilograms each and 32 Poplar River/Big Black fishermen were allowed 3175 kilograms each. Forty-six additional winter commercial fishing licences for the Sturgeon Bay/Reindeer Island area of Lake Winnipeg were allocated to the communities of Fairford, Lake St. Martin, Little Saskatchewan, Dauphin River, St. Martin and Gypsumville communities by local committees. A lake quota of 113,379 kilograms of fish was established on Lake St. Martin for the winter fishing season. The quota was negotiated after consultation with Lake St. Martin fishermen and the granting of additional licences on Sturgeon Bay.

During 1982/83, a community controlled licensing system and individual quotas were established on Cedar Lake. A local board of directors was elected and worked closely with the Department in developing licensing criteria. Individual quotas were implemented during the open water season however, fishermen are divided as to the effectiveness of individual quotas on their lake.

Moose Lake commercial fishermen who claimed traditional fishing rights on Moose Lake, North Arm were allocated 11,338 kilograms of pickerel and whitefish in the summer of 1982. However, in December 1982, the Moose Lake, North Arm commercial fishery was closed to Moose Lake fishermen for a period of two years (until the summer of 1985) due to overproduction of quota and wastage of fish.

Several on-going projects continued from previous years. Experimental fyke netting and trawling programs were again conducted on Lake Winnipeg to index yearlings and young-of-the-year pickerel and sauger. Index fishing and commercial catch sampling programs were continued on a number of lakes to monitor the conditions of various fish stocks. Reports were published on the results of the annual experimental netting and commercial sampling programs on Cedar Lake and Lake Winnipeg.

An examination of an alternative licensing system including the possibility of transferable quotas was begun. An independent study will be conducted by an outside agency.

Fisheries Enhancement

Investigations into the growth and survival of walleye fry in selected Lake Winnipegosis rearing ponds were completed. A report was produced on these results and estimates made on the contribution of pond-reared walleye to the Lake Winnipegosis commercial fishery.

Recommendations were provided on optimum stocking rates for rearing ponds and optimum periods for fish release.

A two-year study on the Valley River watershed, which empties into Dauphin Lake, was initiated to determine the cause and effect of natural and man-made changes to physical, chemical and biological characteristics of the river and its tributaries.

The Fairford River Dam separating Lake Manitoba from Lake St. Martin was designed to maintain water levels on Lake Manitoba. It has long been a controversial subject with fishermen who feel the dam has severely impaired traditional fish movements between Lake Manitoba, Lake Winnipeg and Lake Winnipegosis. Design plans were completed for a fishway at the dam; it is intended that construction of the fishway be completed in 1983.

A report was completed on a study of Manitoba's fish resource potential, past trends in sport and commercial fisheries development and projection of future demands on the fish resource.

Fisheries guidelines were written for spraying and clearing of road allowances and hydro lines right-of-ways and were distributed to regional fisheries managers.

The annual winter program of monitoring dissolved oxygen in sport fishing lakes in southern Manitoba was continued to determine sport fishery potential and likelihood of winterkill.

A Helixor aeration system was installed and operated at Kenton Reservoir near Kenton in an effort to improve the water quality and reduce the likelihood of fish winterkill. The Kenton Village Committee has agreed to accept operational and maintenance costs within three years if the equipment proves successful. A comparable facility at Killarney Lake appears to have been a success and the Town of Killarney has assumed operation of this equipment.

Tourist Angling

The viability of tourist lodges in the northern and eastern areas of the province is largely dependent on the proper management of game fish and the continued opportunity for high quality angling. The Fisheries Branch continues to work closely with lodge owners and Tourism personnel regarding the development and operation of these facilities. Creel censuses were conducted on several developed lodge lakes to evaluate the impact of angling on fish stocks. Additional underdeveloped lakes were inventoried and assessed for their potential development.

Fishermen Employed in Manitoba's Commercial Fishery, 1982-83*

	Northern Lakes	Lake Winnipeg	Lake Manitoba	Lake Winnipegosis	Other Lakes	Overall
Summer						
Licence holders	597	777	72	65	94	1,553
Hired men or helpers	141	277	0	128	0	538
Total	738	1,054	72	193	94	2,091
Winter						
Licence holders	150	322	544	132	284	1,426
Hired men or helpers	55	123	569	165	140	1,045
Total	205	445	1,113	297	424	2,471
Annual						
Licence holders	647	846	568	146	320	2,459
Hired men or helpers	162	293	567	227	140	1,367
Total	809	1,139	1,135	373	460	3,826

Those fishermen who fish more than one area or season or who fish both as hired men and licence holders are counted only once in the appropriate "Total" column. (Hired man - licence holder duplicate is counted as a licence holder). Since duplications are eliminated, the table does not add horizontally or vertically.

*This table includes 43 fishermen from Lake Winnipeg who hold only retirement licences, 23 fishermen from Northern lakes holding only general permits.

Manitoba Commercial Fishing Production (round weights in kg) by Area and Initial Landed Value by Species 1981-82**

Species	Northern Lakes Summer	Northern Lakes Winter	Lake Winnipeg Summer	Lake Winnipeg Winter	Lake Manitoba Summer	Lake Manitoba Winter	Lake Winnipegosis Summer	Lake Winnipegosis Winter	Other Lakes[1] Summer	Other Lakes[1] Winter	Total Production Summer	Total Production Winter	Total	Total Value Summer	Total Value Winter	Total
Whitefish	997,350	113,500	1,001,900	622,000		55,950	51,500	33,850	96,500	101,600	2,147,250	926,900	3,074,150	1,698,500	1,085,700	2,784,200
*(Roe)	(1,050)								(2,550)		(3,600)		(3,600)	(9,750)		(9,750)
Pickerel	711,850	118,550	1,714,250	272,800		495,150	135,000	25,700	312,450	198,900	2,873,550	1,111,100	3,984,650	6,143,650	3,008,300	9,151,950
Sauger	600	250	968,500	661,800		188,650	400	250	150	1,550	969,650	852,500	1,822,150	1,520,700	1,686,000	3,206,700
Pike	534,650	212,600	308,650	84,700		627,650	105,350	556,350	83,350	288,950	1,032,000	1,770,250	2,802,250	430,350	815,650	1,246,000
Tullibee	69,600	27,400	TR						112,900	21,400	182,500	48,800	231,300	68,850	26,500	95,350
Trout	45,350	5,050									45,350	5,050	50,400	32,250	4,350	36,600
Mullet	3,550	32,750	25,600	37,300		677,600	267,100	619,950	2,050	96,250	298,300	1,463,850	1,762,150	41,450	212,150	253,600
Goldeye	6,950	200	650	1,000			200	400	50	150	7,850	1,750	9,600	4,050	1,350	5,400
Perch	500	300	55,450	26,300		10,000	50	850	150	3,600	56,150	41,050	97,200	59,300	58,800	118,100
Carp			124,600	10,050	547,250	34,300	36,600	39,700		150	708,450	84,200	792,650	131,100	16,450	147,550
Maria Sturgeon	7,150										7,150		7,150	30,200		30,200
Bass			350		1,300						1,650		1,650	150		150
Catfish			12,300	900							12,300	900	13,200	5,350	350	5,700
Total	2,377,550	510,600	4,212,250	1,716,850	548,550	2,089,300	596,200	1,277,050	607,600	712,550	8,342,150	6,306,350	14,648,500	10,165,900	6,915,600	17,081,500

1. Includes Buffalo, Cedar, Chitek, Dauphin, Dog, Jackpine, Little Limestone, Lonely, Pelican, Red Deer, Spence, St. Martin, St. Peter's, Swan, Waterhen and William Lakes.
*Figures for roe are not included in table totals.
TR Trace (Small Amount)

Manitoba Commercial Fishing Production (round kg), Initial Value, and Employment (Licensed Fishermen plus Hired Men) since 1976-77**

Year	Northern Lakes Kg	Northern Lakes $	Lake Winnipeg Kg	Lake Winnipeg $	Lake Manitoba Kg	Lake Manitoba $	Lake Winnipegosis Kg	Lake Winnipegosis $	Other Lakes Kg	Other Lakes $	Manitoba Total Kg	Manitoba Total $	Total Employment
1976-77	3,087,550	1,779,900	4,497,500	3,947,750	1,059,850	722,950	823,650	347,550	1,228,000	769,500	10,696,550	7,567,650	2,953
1977-78	3,418,800	2,112,300	4,764,950	4,756,250	1,726,150	510,400	2,013,900	715,450	1,286,050	713,850	13,209,850	8,808,250	3,170
1978-79	2,915,500	1,758,700	4,949,100	4,529,950	1,535,500	566,650	2,462,000	753,400	1,577,650	983,250	13,439,750	8,591,950	3,161
1979-80	3,679,500	2,505,350	5,258,100	5,611,300	2,921,450	2,120,450	2,926,000	1,073,800	1,846,400	1,485,550	16,631,450	12,796,450	3,213
1980-81	3,474,300	2,625,850	6,652,800	6,932,900	2,330,400	1,677,700	3,172,650	972,100	1,816,100	1,690,750	16,446,250	13,899,300	3,659
1981-82	2,888,150	3,069,750	5,929,100	9,231,800	2,637,850	2,271,400	1,873,250	862,600	1,320,150	1,645,950	14,648,500	17,081,500	3,767

**Commercial fishing statistics for the 1982/83 fiscal year were not available in time to be included in this report. However, this information may now be obtained by contacting the Fisheries Branch, Manitoba Department of Natural Resources.

In order to preserve the quality of fishing in fly-in lodge lakes, a high quality management designation was developed. At the request of the lodge operator, the Branch will list the lake in the Sport Fishing Regulations and reduce catch limits for walleye and pike to four and lake trout to one fish. This unique type of program allows the users of the lakes to have some responsibility for the limits imposed on the lakes. In total, there are 16 lakes in this category.

The Branch, in cooperation with Tourism, the federal government and the Manitoba Lodge and Outfitters Association, conducted an economic and management survey of the lodge industry. This should provide new information for the improved management of this valuable industry.

Revenue received from non-residents was down, probably because of economic conditions and reduction of catch limit for three-day licences in southern Manitoba. High priority is given to the demands of the resident angler in this portion of the province.

Trout Farming

The trout farming program continued during 1982/83 with about 300 permits being issued. The type of operation is slowly changing to that of the "hobby farmer" who wants to raise a few hundred trout for his own personal use, from the idea that there are large profits to be made in trout farming. About 30 commercial trout farming licences were also issued.

The Branch continues to provide information and assistance to persons who wish to try trout farming. A revised manual with emphasis on recreational trout farming is being prepared.

Bait Fishing

The Fisheries Branch is responsible for the administration and regulation of the bait fishing industry in the province. During the 1982/83 season, 39 bait fish licences encompassing a total of 264 blocks were issued. In addition, three dealers for live bait fish were licensed. Approximately 100,000 kilograms of bait fish was produced for a gross value of $320,000. Meetings were held with the bait fishermen and some changes were made in the administration of the bait fish policy. As well, there was a freeze imposed on any expansion of the live bait industry, until a review can be conducted.

Sport Fishing

With the continued improvement in efficiency and knowledge of sport anglers, conservation of the sport fishing resource has become more essential each year. The Fisheries Branch continues to promote the Catch and Release Program in addition to encouraging anglers to fish for under-utilized species such as carp, bullheads, catfish, suckers and burbot. The "Go Barbless" logo designed for the program is becoming better recognized.

Legislation was enacted to permit anglers only one limit of fish when on or near a lake which crosses a Manitoba border. This regulation prevents anglers who have angling licences of two provinces from taking both a Manitoba and the bordering province's limits from the same lake.

In order to preserve trophy fishing in northern Manitoba, the Branch has imposed a maximum size limit on walleye, pike, lake trout and grayling. This innovative legislation allows anglers to retain only one trophy fish over the maximum size of the listed species, while all other fish in their limit must be smaller than the maximum size limit, a move supported by the lodge industry.

A creel census was conducted on the Red River between Lockport and the mouth of Netley Creek. This census provided information on fish harvest, intensity and distribution of use. Results showed that the average angler spends about three hours fishing on the river — catching about 1 kilogram of fish. The species most frequently caught was the sauger, a close relative of the walleye. Silver bass was the second most frequently caught fish species on the Red River — followed by goldeye, walleye, bullhead and catfish.

Fish Culture

Three permanent hatcheries, 2 seasonal hatcheries and 3 mobile operations contributed to hatchery production. Commercial fishing waters were stocked with 80 million whitefish fry, 700,000 whitefish fingerlings and 48 million walleye fry. Four million walleye fry were stocked in rearing lakes for later release to fishing waters. More than 100 sportfishing waters were enhanced with a variety of fish species. Sales of rough fish and fish eggs returned $6,300 to general revenue. Eight hundred and forty thousand eyed lake trout eggs were returned to the sampling grounds.

Distribution to Sportfishing Waters From Fish Hatcheries, 1982/83

	Fry	Fingerlings	Adults
Walleye	5,000,000	162,580	200
Northern Pike			11,175
Muskellunge		100,000	
Perch			29,700
Smallmouth Bass		50,000	
Rainbow Trout		5,000	34,700
Brook Trout			83,520
Brown Trout			11,800
Lake Trout			40,000
Splake		36,000	31,000

Angling Licence Sales & Revenue, 1973/74 to 1982/83

	Resident Licences			Non-Resident Licences						Total Licences	
				3 Day Licences			Seasonal Licences				
Year	Number	Fee	Revenue	Number	Fee	Revenue	Number	Fee	Revenue	Number	Revenue
1973/74	127,440	$3.00	$350,917.00	7,871	$ 5.00	$37,517.50	26,217	$10.00	$256,380.00	161,528	$ 644,814.50
1974/75	137,492	3.00	378,546.75	7,420	5.00	35,357.50	24,306	10.00	237,630.50	169,218	651,534.75
1975/76	142,254	3.00	391,682.50	8,423	5.00	40,240.00	28,306	10.00	276,691.75	178,983	708,614.25
1976/77	150,020	3.30	458,213.85	9,845	5.50	51,957.50	29,475	11.00	317,603.80	189,340	827,775.15
1977/78	148,289	3.30	452,849.70	9,175	5.50	48,401.25	28,363	11.00	305,800.50	185,827	807,051.45
1978/79	156,553	3.30	477,979.15	10,918	5.50	57,569.75	29,929	11.00	322,571.00	197,400	858,119.90
1979/80	155,790	3.30	475,621.75	9,590	5.50	50,534.25	31,029	11.00	334,312.75	196,409	860,468.75
1980/81	159,584	3.30	487,384.20	8,658	5.50	45,612.50	32,353	11.00	348,565.25	200,595	881,561.95
1981/82	159,233	3.30	486,394.90	8,439	5.50	44,469.50	32,037	11.00	344,723.50	199,709	875,487.90
1982/83*	164,384	5.00	741,087.50	3,777	12.00	45,302.50	28,561	20.00	557,353.50	196,722	$1,341,943.50

NOTE: Revenue figures are net (less vendor's commission).
*Subject to reconciliation and audit.

Forestry Branch

Forestry Branch

Responsibilities:

Administers the Forest Act; develops commercial harvesting plans for Manitoba's forests; administers timber cutting licensing and measurement; conducts tree improvement and forest genetics studies; coordinates silviculture, reforestation and timber management programs; maintains a forest inventory; develops forest protection programs; conducts Dutch Elm Disease control programs.

Forest Renewal

1) **Forest Nursery Expansions**

During the fiscal year 1982/83, the Forestry Branch undertook a major expansion of the reforestation capabilities of the Province. A new tree nursery was developed at Clearwater Lake, north of The Pas, and two new greenhouses were added to the existing Pineland Forest Nursery at Hadashville.

The new Clearwater Provincial Forest Nursery is primarily designed to produce 4 million containerized tree seedlings at one time for planting in northern and western forested areas in Manitoba. Site clearing began in July of 1982 and the first two inflated poly greenhouses were operational on March 15, 1983, with seeded trays being placed in them the following week.

Upon completion in 1987, the new nursery will consist of 20 greenhouses, a cone storage area, a seed extraction area, a seeding line, bare root cold storage and packing sheds, 20 permanent shade structures, an office, a maintenance and repair shop, a modern bunkhouse and employee housing. An official opening is planned for June, 1983. The first tree seedlings will be outplanted in the spring of 1984 in northern sites.

At the Pineland Forest Nursery, two new double layer inflated poly greenhouses complete with rolling benches were erected. Each greenhouse is approximately 8.25 metres by 33 metres and is cabable of growing 217,000 seedlings at one time.

2) **Reforestation**

The 1982 spring reforestation season enjoyed fairly normal weather conditions except for some excessive moisture problems in the Porcupine Mountain area.

A total of 4,571,837 seedlings, both bare root and containerized, were planted on 2203 hectares. In addition, 118 hectares were prepared and seeded and 3627 hectares were scarified and left for natural seeding from cone-bearing slash. In total 5948 hectares were reforested in 1982/83.

By region, the area reforested was: northern — 3324 hectares; western — 771 hectares; eastern — 1054 hectares; southern — 764 hectares; interlake — 35 hectares.

All containerized stock produced in the four greenhouses at the Hadashville nursery were grown for the Abitibi-Price Inc. forest management licence. In 1982, Abitibi planted 987,698 black spruce containers on 433 hectares. In addition, overwintered stock of 73,135 white spruce and 25,704 black spruce containers were planted by the Province on 50 hectares.

The C & H plow and planting machine was used for the second full season and planted 116,500 bare root seedlings. This number was low due to mechanical problems with the contract prime mover. The cost of machine planting was 57.7% lower than the normal hand planting method.

Approximately 4418 hectares of natural regenerated forest (includes 78 cutovers) and 1102 hectares of plantations (includes 46 plantations) were surveyed for survival and growth performance.

3) **Tree Improvement**

The establishment of seed orchards for white spruce and black spruce continued. A site is also being prepared for an additional orchard for black spruce to be established in 1985. The objective of the seed orchard program is to produce superior seed through good breeding and controlled pollination for future forest renewal programs.

Additional information was collected and added to the culling manual for bareroot conifer stock. Large-scale photographs of seedlings are being used to assist in the culling process.

The hybrid poplar Walker program was extended with the establishment of two new plantations in the Western Region. Volume measurements of the hybrid poplar Walker in established plantations has begun.

Measurement of seed-bed density spacing trials were undertaken in the nursery fields. In addition, direct seeding trials were implemented in the Western Forest Region.

Timber Management

1) Timber Production from Crown Lands

The 1981/82 prediction of a continued decline in the volume of timber harvested from Crown lands held true. Only 1,478,092 m^3 of wood was reported as harvested for the 1982/83 fiscal year. This amounts to a reduction of 303,986 m^3 or 17% over the previous year and a 36.3% reduction from two years before when an all-time high of 2.32 million cubic metres were reported harvested.

Within the various product classes, pulpwood and lumber, which constitutes 88% of the harvest, as well as mine timber and utility poles, have all posted volume declines. However fuelwood, round timber, fence posts, and Christmas trees posted small gains as compared to 1981/82. The only significant increase occurred in fuelwood where volumes increased 26% over the previous year. This category now accounts for 7.5% of the total provincial harvest.

2) Scaling Courses

The 1982/83 Departmental scaling courses were again held during mid May at Swan River. Thirty-four candidates attended the full week certification course and nine candidates attended the half week metric refresher course for imperial unit licensed scalers. As this was the largest number of candidates yet to attend this Departmental course, an additional instructor, Mr. Michael Rachuk, check scaler for Abitibi-Price, Pine Falls, assisted the Branch staff in the preparation and delivery of the scaling instructional program.

Forest Inventory

Forest Inventory Reports summarizing forest conditions and wood volumes available annually were completed for Management Unit 04 (Glenboro) in the Aspen Parkland Forest Section, Forest Management Unit 14 (Porcupine Provincial Forest) in the Mountain Forest

Annual Harvest and Value[1] of Shipments by Manitoba Forest Products Industry, 1974 to 1983[2]

Year	Total Harvest (In Cubic Metres)	Forestry Revenues	Value of Shipments by Forest Industry Sector		
			Logging	Primary Manufacturing[3]	Secondary Manufacturing[4]
1974	1,588,759	$ 843,081.37	$31,785,000	$ 86,000,000	$117,000,000
1975	1,932,383	924,586.53	34,587,000	90,000,000	128,000,000
1976	1,851,552	1,739,308.27	32,664,000	102,000,000	129,000,000
1977	1,519,998	1,345,601.02	36,508,000	99,000,000	143,000,000
1978	1,646,562	1,176,078.00	39,572,000	124,000,000	160,000,000
1979	1,714,300	1,292,180.63	48,257,000	158,000,000	173,000,000
1980	1,940,082	1,624,290.86	61,803,000	174,000,000	203,000,000
1981	2,319,991	1,908,776.72	50,765,000	179,000,000	247,000,000
1982	1,782,078	1,792,589.82	41,999,000	137,000,000	252,000,000
1983	1,478,092	1,383,734.70	N/A	N/A	N/A

[1] Value of production as defined by Statistics Canada.

[2] Fiscal Year ending March 31 used for harvesting and logging statistics. Calendar year used for primary and secondary manufacturing value added.

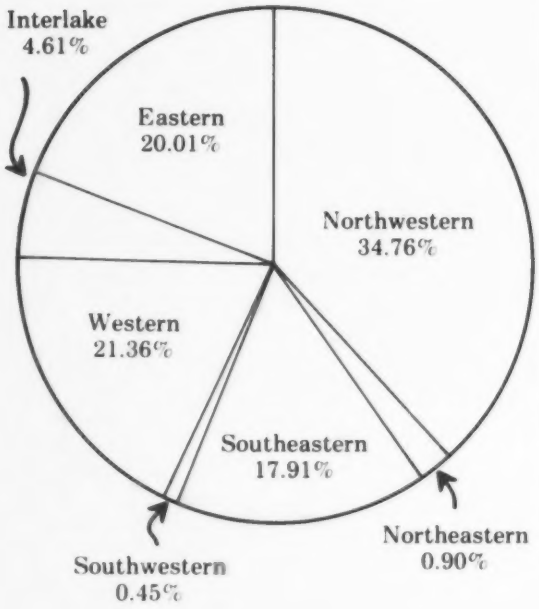
[3] Primary manufacturing includes sawmills and planing mills, pulp and paper mills and miscellaneous wood factories.

[4] Secondary manufacturing includes sash, door and other millwork; coffin and casket industry; wooden box factories; asphalt roofing manufacturers; and miscellaneous paper converters.

Summary of Annual Forest Production by Forest Product (in cubic metres), 1978/79 to 1982/83 ending March 31st

Year	Pulpwood		Lumber		Fuelwood		Other		Total	
	Volume	%	Volume	%	Volume	%	Volume	%	Volume	%
1978/79	967,363	56.4	559,326	35.0	78,212	4.5	69,399	4.1	1,714,300	100%
1979/80	1,124,615	58.0	647,470	33.4	103,716	5.3	64,281	3.3	1,940,082	100%
1980/81	1,458,039	62.9	681,876	29.4	95,893	4.1	84,223	3.6	2,319,991	100%
1981/82	1,100,921	61.8	535,034	30.0	88,369	5.0	57,754	3.2	1,782,078	100%
1982/83	787,879	58.3	518,062	35.1	111,555	7.5	60,596	4.1	1,478,092	100%

Timber Cut by Departmental Regions 1982/83



Section and Forest Management Units 43 (Gypsumville) and 47 (Grand Rapids South) in the Interlake Forest Section.

Forest Survey crews collected sample plot data in Forest Management Units 10 (Dauphin-Winnipegosis), 11 (Swan River) and 12 (Mafeking) in the Mountain Forest Section of Western Manitoba. On the area covered by the forest survey field parties, 3579 sample plots were established and 37,240 trees were measured for the revision of three stand/stock volume tables.

Statistical reports for the areas in the northern portion of the Mountain Forest Section (excluding the Porcupine Provincial Forest) indicate a decreasing trend in productive forest land area of between 5 and 10 percent over the last 18 years. On the positive side, volumes of tree species on the remaining productive forest land have increased over the same period by between 15 and 20 percent. The 1980 fire in the Porcupine Provincial Forest has resulted in a decrease in softwood volumes of 30 percent which equates to the loss of 18 years of softwood growth plus an additional 30 percent of the softwood growing stock.

Continuing forest inventory activity in the Aspen Parkland Forest Section has now located and identified a total of 28.4 million cubic metres of wood consisting of 95 percent deciduous and 5 percent coniferous species. This merchantable wood volume is located on approximately 13 percent of the land area.

The aerial photography program for the Saskatchewan River Forest Section was completed on schedule. As part of the Dutch Elm Disease Program a second large area in southwestern Manitoba extending from approximately Highway 10 to Saskatchewan and from Riding Mountain National Park to North Dakota was photographed on schedule.

Forest Protection

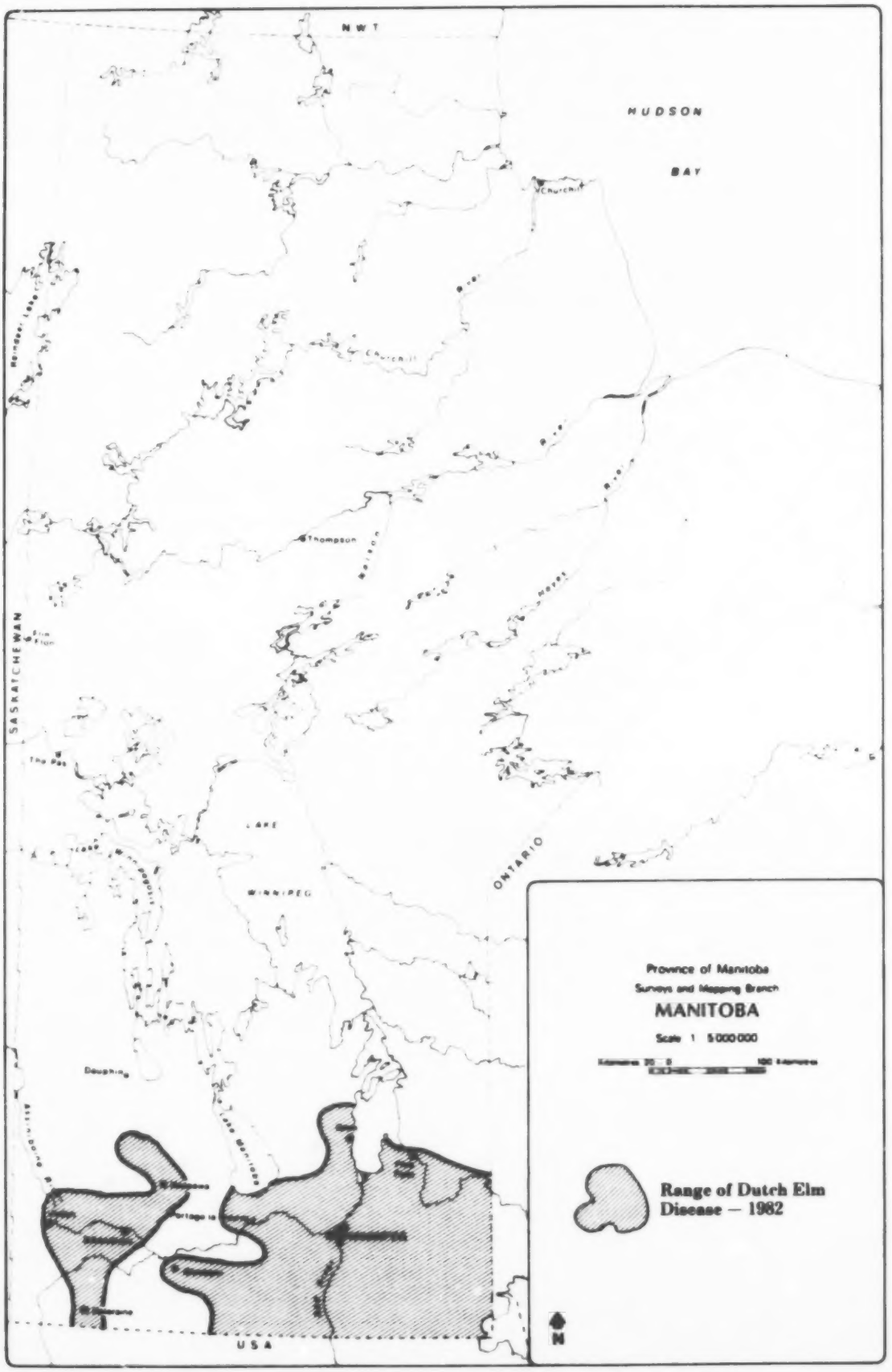
1) **Dutch Elm Disease Control**

As anticipated, the incidence of Dutch Elm Disease (DED) in the wild elm stands of Manitoba showed a steady increase in 1982/83. There were 5711 elm trees sampled in and around urban and rural municipalities during the regular surveillance program, of which 2992 or 52% were found to be infected with the disease. The outbreak is spreading along the Manitoba-North Dakota border as well as along the major river systems in southern Manitoba (see map attached). Diseased elms were recorded in 12 additional rural municipalities bringing the total number of rural and urban municipalities involved to 53 as of March 31, 1983. This includes the major centres of Winnipeg, Brandon and Portage la Prairie. New infections were recorded in the Local Government District of Stuartburn, and in the rural municipalities of Bifrost, La Broquerie, Rhineland, Stanley, Winchester, Sifton, Whitehead, Woodworth, Daly, Langford and Harrison.

In contrast to this increase of DED in the wild elm stands, the mortality rate of elms in the urban centres that have a control program in place has been held between 1 and 2 percent. However, in the City of Winnipeg where a control program has been in place since prior to 1975 when DED was first found in Manitoba, the mortality rate has been less than 1 percent. Although an increased number of trees to be

Forest Inventory Projects 1982/83

Project	AREA	
	Square Km's	Square Miles
Aerial Photography	48,900	18,880
Forest Cover Mapping	22,070	8,520
Air Photo-Interpretation	24,900	9,610
Forest Surveys	19,600	7,570
Area Compilation	27,370	10,570
Area and Volume Statistics	33,890	13,090
Forest Inventory Reports	20,870	8,060
Township Air Photo Mosaics	12,540	4,840


NWT
HUDSON
BAY
Churchill
Thompson
SASKATCHEWAN
LAKE
WINNIPEG
ONTARIO
Province of Manitoba
Surveys and Mapping Branch
MANITOBA
Scale 1 5000000
Range of Dutch Elm Disease — 1982
N
USA

removed were found within the boundaries of the major centres, Winnipeg and Brandon specifically, more than 85% of these were located along riverbanks in wild elm stands where control measures are less concentrated and a higher mortality rate is expected.

A large percentage of the trees removed were not actually infected (see table) but were classed as "hazard" trees. The definition of a "hazard" tree is: Any elm tree that has deteriorated to the point that it is capable of supporting elm bark beetle breeding activity, making it a hazard to the spread of Dutch Elm Disease.

A total of 2992 diseased trees and 9997 hazard trees were removed across southern Manitoba in the interest of Dutch Elm Disease control.

The total number of cost-sharing agreements between the Province and individual communities for the control of DED increased by 16 in 1982/83 to a total of 26. These communities carried out a DED control program on a 50/50 cost-share basis with the Province. The various management strategies utilized included: sanitation, pruning and removals; basal spraying; buffering; tree replacements; development of elm disposal sites; site specific inventory; and tree injections. The total amount expended by the Province under these agreements was $513,727 which included all 26 communities, 2 demonstration agreements in Carman and Dauphin as well as a special tree removal agreement with each of Winnipeg, Brandon and Portage la Prairie.

Research efforts continued through 1982/83 directly with Department staff and indirectly in conjunction with universities, private and other government research facilities. The thrust of this research has been to identify aspects of the fungus that causes the disease and the beetle that spreads it that are specific to Manitoba.

The DED control program has grown with the increased incidence of the disease in Manitoba, maintaining a mortality rate of 1 to 2 percent within urban control centres. As wild elm stands become more and more infected with Dutch Elm Disease, the "disease pressure" that will be applied to urban elms will increase proportionately. Only continuing efforts to maintain and enhance the existing control program will insure the continued health of our street and ornamental elm trees.

2) Forest Pest Management

Dwarf mistletoe infections in Bélair Provincial Forest were mapped using an aerial event-recorder on loan from the Canadian Forestry Service. Within the area mapped, 37% of the black spruce stands and 29% of the jack pine stands were infected. Considerable mortality has resulted. A five year plan for dwarf mistletoe management in high value areas of Spruce Woods Provincial Park was prepared and implemented. Volume loss studies for jack pine dwarf mistletoe being carried out in conjunction with the University of Minnesota were continued throughout the year. A dwarf mistletoe management proposal was drawn up for inclusion in the 5 year Federal-Provincial Forestry Agreement.

Moderate to severe defoliation caused by the spruce budworm was scattered over approximately 4000 hectares of white spruce-balsam fir forests, predominately in the Interlake, Whiteshell and east of Lake Winnipeg. Due to repeated defoliation balsam fir mortality is occurring over an area of approximately 2000 hectares.

Two experimental studies were initiated, one to determine the optimum timing for budworm control under Manitoba conditions and the other to predict budworm defoliation on white spruce.

Infestations of forest tent caterpillars caused widespread moderate to severe defoliation of aspen throughout the Northwestern Region extending over an area approximately 600,000 hectares. Scattered light defoliation occurred in

Dutch Elm Disease Infected Trees Removed 1982/82 and 1982/83

District	1981/82	1982/83
Winnipeg	757 Diseased 253 Hazard 1,010 Trees Removed	1,100 Diseased 3,127 Hazard 4,227 Trees Removed
Brandon	298 Diseased 527 Hazard 825 Trees Removed	284 Diseased 675 Hazard 959 Trees Removed

Turtle Mountain. A study was initiated to determine whether repeated tent caterpillar defoliation predisposes aspen to infection by Hypoxylon canker.

Other forest pest occurrences included:

- Jack Pine Budworm: Moderate to severe defoliation of jack pine occurred for a distance of 40 kilometres just north of Grand Rapids.
- Pinewood Nematode: This pest was discovered for the first time in Canada in jack pine killed by dwarf mistletoe in the Bélair Provincial Forest.
- Red Pine Needledrop: This disease, believed to be physiological in origin, was widespread throughout the Sandilands Provincial Forest.
- Nursery Pests: Lophodermium needle cast, western gall rust and strawberry root weevil were all found causing damage to seedlings in the Pineland Provincial Nursery.

In research, work was begun in conjunction with the Canadian Forestry Service and Forest Genetics for breeding varieties of jack pine resistant to western gall rust.

Forest pest management research needs were identified and presented to the first meeting of the federal-provincial Memorandum of Understanding on Forestry Research. Research needs included dwarf mistletoe, spruce and jack pine budworms, Armillaria root rot, western gall rust and Hypoxylon canker.

Wildlife Branch

Wildlife Branch

Responsibilities:

Develops and implements management programs designed to ensure that the wildlife resource is passed on to future Manitobans in at least as vigorous a state as it was received by the present generation; delivers programs that provide for the subsistence, commercial and recreational use of the wildlife resource; implements programs to alleviate wildlife damage to people and property; promotes the use of wildlife for scientific and educational purposes.

Wildlife Harvesting

A) Trapping

Manitoba's 17,000 trappers harvested approximately $4.5 million in wild fur in 1982/83, down about $1 million from the previous year. Reduced pelt values, the product of a depressed European market, a predictable, cyclic decline in lynx populations and extremely adverse weather conditions accounted for the decline.

Trapline Officers continued to deliver fur management programs at the field level. They held training sessions, helped trappers in obtaining assistance grants and provided valuable data on climatic conditions and animal populations. The service greatly strengthened departmental relations and credibility in remote native communities. The federal Department of Indian Affairs and Northern Development contributed $87,500 to the program.

Trapper education and humane trapping program activities increased substantially. Presentations were made to more than 1400 students in 13 classrooms to present a balanced view of Manitoba's trapping industry. Field testing of improved traps began on experimental traplines at Wallace Lake and Tramping Lake, and will be expanded in the coming year. The Tramping Lake Field Station, regarded as the best of its kind in Canada, will be the site of

Quantity Produced, Average Pelt Price, Value of Production and Provincial Royalty Paid by Species for the year ending August 31, 1983

Species	Quantity	Average Price	Value	Approximate % of Total Value	Royalty Per Pelt	Royalty
Badger	458	$ 34.00	$ 15,572	.4%	$ .01	$ 5
Bear	784	50.00	39,200	.9%	.05	39
Beaver	24,532	17.00	417,044	9.7%	.75	18,399
Coyote	9,992	55.50	554,556	12.9%	.50	4,996
Ermine	5,991	2.30	13,779	.3%	.05	300
Fisher	4,585	144.00	660,240	15.3%	1.00	4,585
Fox, Blue	10	25.90	259	.0%	.25	3
Fox, Cross	944	99.00	93,456	2.2%	.25	236
Fox, Red	12,917	45.00	581,265	13.5%	.25	3,229
Fox, Silver	194	34.50	6,693	.2%	.25	49
Fox, White	1,288	27.00	34,776	.8%	.75	966
Lynx and Bobcat	2,059	323.00	665,057	15.4%	.50	1,029
Marten	3,233	49.00	158,417	3.7%	.50	1,617
Mink	9,910	29.00	287,390	6.7%	1.00	9,910
Muskrat	168,047	2.97	499,100	11.6%	.05	8,402
Otter	1,627	44.50	72,402	1.7%	1.25	2,034
Rabbit, Jack	243	0	0	.0%	.02	5
Raccoon	4,090	21.00	85,890	2.0%	.05	205
Skunk	69	0	0	.0%	.01	1
Squirrel	39,482	1.50	59,223	1.4%	.02	790
Wolf, Timber	424	92.50	39,220	.9%	.25	106
Wolverine	141	213.00	30,033	.7%	.75	106
Total			$4,313,572			$57,012

Number of Open Area and Registered Trappers and the Estimated Value of Manitoba Wild Fur Production for the 12 month period ending August 31*

Year	Open Area Licences Sold	Registered Traplines Licences Sold	Total Production Value
1973/74	5,885	2,223	$2,779,102
1974/75	6,280	2,334	2,583,230
1975/76	6,492	2,680	4,248,272
1976/77	8,602	2,879	5,528,268
1977/78	8,379	2,975	5,047,377
1978/79	10,040	3,238	7,882,404
1979/80	12,809	3,627	9,615,604
1980/81	13,327	3,425	8,240,619
1981/82	13,072	3,187	5,564,491
1982/83	13,938	3,110	4,313,572

*In 1981/82, the Departmental Fur Year was changed to the 12 month period ending August 31. The information for all previous years is based on the 12 month period ending September 30.

major humane trap development programs in coming years.

Fur staff administered 10 special ARDA (Agricultural Rural Development Act) trapping grants. The grants provided $180,000 in assistance to trappers to aid in the purchase of traps, equipment and supplies.

One of the most successful conventions in the history of the Manitoba Registered Trappers Association in terms of participation and enthusiasm was held in Gimli on March 6 and 7, 1983. Delegates from 42 local fur councils attended to present their concerns to the gathering.

Wildlife staff are playing a leading role in developing the Fur Institute of Canada (FIC), a non-profit corporation to be funded by both the private and public sectors. FIC will be coordinating a national program of humane trap development and will provide information, in Canada and abroad, concerning the value and dynamics of the fur industry.

B) Reptile Harvesting

A near-record number of red-sided garter snakes were collected by Manitoba snake pickers licensed under 17 family and 50 individual commercial collecting licenses. The 1982 harvest of 65,000 snakes exceeded the 1981 collection by 29,500. This increased harvest is attributed to favourable weather and an expansion of the collecting season from one week to two. Snakes were purchased by three licensed dealers for 40¢ each, providing collectors with a combined income of $25,000. All snakes were exported to the United States for marketing in the biological supply and pet trades.

Wildlife Education

The Oak Hammock Marsh Nature Tour Program continued to grow in popularity as indicated by the number of visitors (3500) who were taken on a tour of the wildlife management area between May and October of 1982. Throughout the year an estimated 35,000 Manitobans and tourists visited the 3523-hectare wetland and upland complex which is recognized as one of the top bird-watching and waterfowl hunting areas in North America. The self-guiding nature interpretation program reached new heights in 1982 with the expenditure of $265,000 on visitor service facilities. These facilities include, in part, a new boardwalk and observation mound, a picnic shelter, a network of interpretive signs, dyke walkways, washrooms, a water fountain and benches all designed to accommodate the physically handicapped. Roads were also upgraded to improve access to the area.

Staff continued to take groups of interested Manitobans on tours of Narcisse, Souris River Bend, Mantagao and Brandon Hills wildlife management areas. The Narcisse Wildlife Management Area, in particular, generated considerable public interest when it was expanded in size to encompass the wintering home for tens of thousands of red-sided garter snakes. Plans are underway to provide an interpretive program to explain the significance of the dens and their occupants to visitors.

In 1982, National Wildlife Week activities were sponsored by the Wildlife Branch, the Manitoba Wildlife Federation and the Manitoba Naturalists Society. As in previous years, the Wildlife Branch mailed education kits (10,000 English, 500 French) to Manitoba school teach-

ers in grades one to eight. The annual art contest, expanded to include posters and poems, drew over 3500 entries from 220 schools across Manitoba. Sponsors contributed to the program by organizing a four-day wildlife film festival and manning exhibits at the Winnipeg Sportsmen's Show and Polo Park Shopping Plaza. The program also saw the first-time appointment of a wildlife ambassador for National Wildlife Week. As wildlife ambassador, Winnipeg Blue Bomber Joe Poplawski greatly enhanced public awareness of the value of wildlife through personal appearances and public service announcements. In addition, a game entitled "Homes of Furbearers" was developed in conjunction with the Manitoba Naturalists Society as a National Wildlife Week activity. It is a table-top game designed for use as a classroom learning aid for elementary school students.

A new wildlife awards program was established in 1982 to recognize exceptional accomplishments and a high degree of commitment in the field of wildlife conservation. Under the program, awards will be presented annually to individuals, organizations or corporations that have benefited Manitoba's wildlife resource in a meaningful way. The first award was presented to Mr. Alexander MacPhail for his donation of 65 hectares of land to the Province for use as a wildlife refuge.

The Wildlife Branch again cooperated with the Manitoba Registered Trappers Association in setting up and manning a wild fur exhibit at the week-long Festival du Voyageur. The display attracted over 13,500 visitors.

Manitobans were offered the opportunity to perfect their hunting skills in a Moose Hunter Seminar, an annual event co-sponsored by the Wildlife Branch, the Manitoba Wildlife Federation and Labatt's Breweries. The same opportunity was extended to waterfowl hunters at the first Waterfowl Hunter Seminar. The informative two-day session focused primarily on the management and biology of waterfowl.

Staff met regularly with Indian bands and tribal councils to discuss wildlife management requirements and to investigate proposals for joint agreements for improved communication, conservation and wildlife management.

Wildlife grants totalling $4000 were provided to the magazine "Manitoba Nature" and to the delta Waterfowl Research Station.

Habitat Management

A) Wildlife Management Areas

A variety of habitat improvement projects continued throughout the 48 wildlife management areas in the province. These projects included planting approximately 3000 trees in southwestern areas, developing about 40 hectares of forage plots in southeastern and western areas, and improving the major dykes and diversion channels at Oak Hammock Marsh. In a joint venture with the Manitoba Wildlife Federation, the Province also purchased 194 hectares of land in the Ile de Pilotte wildlife project southeast of St. Malo along the Rat River for eventual designation as a wildlife management area.

Efforts to transfer the administration of agricultural use within wildlife management areas from the Department of Agriculture to the Wildlife Branch began in 1982/83. Toward this end, required legislation was prepared, an administration system was designed and a new policy was formulated.

B) Deer Habitat Program

Under the deer habitat program, forage plots were developed on 32 hectares within several Interlake and Western Region wildlife management areas. In addition, 219 tonnes of supplemental rations were fed to deer at 64 locations throughout agro-Manitoba. This feeding program was concentrated primarily in the Southwestern and Interlake regions to assist core populations of deer to survive over winter.

C) Habitat Bequeathments

Five Manitoba landowners owning prime wildlife habitat requested government assistance in donating their land to the Province for wildlife use. Mr. Alexander MacPhail of Shoal Lake donated 65 hectares to the Province for use as a wildlife refuge. The area has been designated the "John MacPhail Wildlife Refuge." Action is being taken to finalize arrangements in the other areas.

D) Habitat Improvement in Provincial Parks

A cooperative white-tailed deer and waterfowl habitat improvement program between Parks Branch and Wildlife Branch was initiated in Birds Hill and Beaudry provincial parks in 1983. The purpose of the program is to increase wildlife populations for the enjoyment of park visitors. A total of 14 hectares of deer forage fields, 40 hectares of dense nesting cover, and two watering sites were established in conjunction with an ongoing supplemental winter deer feeding program.

E) Wetland Development

Delta Marsh activities in 1982/83 included removing the Clandeboye Dam, landscaping the Delta Channel site, fertilizing 445 hectares of improved forage and planting 15 hectares of new forage in the area.

In 1982, 13 Ducks Unlimited projects involving 906 hectares of Crown land were reviewed and approved by the Wildlife Branch. A plan for rejuvenation of the water regulation system at Oak Hammock Marsh was completed in conjunction with Engineering and Construction Branch, Water Resources Branch and Ducks Unlimited. Considerable effort was expended in attempting to resolve land use issues in the Saskeram Wildlife Management Area, particularly as it related to renewal of the Ducks Unlimited lease in the area. Advisory committees for Oak Hammock Marsh, Summerberry Wildlife Management Area and Saskeram Wildlife Management Area met regularly to evaluate management plans and activities.

The Manitoba Heritage Marsh Program was conceived in 1982/83. Considered for implementation in 1983/84, the program, involving a partnership between government and private conservation organizations, seeks to preserve Manitoba's valuable large wetlands.

A development and management proposal for the Netley Marsh was completed. The proposal identifies development alternatives to improve waterfowl and furbearer habitat in the marshes and the potential impact of these alternatives.

F) Habitat Inventories

The priority project in 1982/83 was the Moose Habitat Inventory of the Northern Flood Agreement Area (approximately 152,000 square kilometres). Through computer analysis of Landsat satellite digital tapes, the area will be mapped and stratified by habitat type to facilitate winter aerial moose surveys.

G) Local Government District Land Trades

Local government district (LGD) lands were acquired by the Province for conversion to wildlife management areas in exchange for agriculturally viable Crown lands outside of wildlife management areas. In the LGD of Alonsa, ten parcels of LGD land (approximately 650 hectares) valued at $64,700 have been acquired. In the LGD of Armstrong, 145 Crown quarter sections have been identified for exchange but an additional $79,000 worth of land will be required to complete all exchanges. Fifty-two parcels of land worth $214,000 have been acquired in the LGD of Grahamdale. Eleven parcels were returned to that LGD and will be removed from wildlife management area status. In the LGD of Fisher, three parcels appraised at $22,400 have been acquired and negotiations are underway for a remaining 12 parcels of LGD land.

H) Crown Land Plannings

The Wildlife Branch provided input to land allocations which affected the wildlife resource. Over 300 Crown leases, permits and sales were reviewed. In addition, background data were provided for the Department's resource allocation scheme for Crown land on the east side of Lake Winnipeg. Wildlife input was provided to the Resource Allocation Branch's planning activities involving 12 planning districts in the province.

Hunting lodge issues were investigated in the Delta Marsh area and the Mantagao Lake Wildlife Management Area. Initial guidelines were prepared governing commercial guiding and outfitting of deer hunters.

The Wildlife Branch continued to assist the Crown Land Classification Committee in reaching Crown land use decisions. In an effort to minimize detrimental consequences of land use decisions on the wildlife resource, the Branch addressed eight Crown Land Use Classification Plans, two provincial forest and ecological reserve plans, the 1982 Operational Crown Land Plan for all Crown land in Manitoba, 147 agricultural Crown land sales, 16 agricultural sale appeals and 415 Crown land exchanges.

Biological Services

The peregrine falcon release program continued through 1982. Four young falcons, obtained from the Canadian Wildlife Service, were successfully reared and released from a pen on a rooftop at the University of Manitoba. The Wildlife Branch will continue to monitor the movement of falcons within Manitoba.

The first study to determine the status of the burrowing owl in Manitoba was initiated in 1982. Over one hundred young owls were banded in the southwestern portion of the province.

Over 12,000 ducks were banded at six locations throughout the province to obtain information on the 1982 waterfowl harvest. Reward bands were placed on mallards at selected banding stations to assist the Canadian Wildlife Service in evaluating the harvest. Biological Services staff again took part in spring waterfowl counts and nesting surveys in cooperation with the Canadian Wildlife Service and the United States Fish and Wildlife Service.

Cooperative studies on nest ecology and hatching success of the eastern prairie population of Canada geese continued on Cape

Churchill for the 15th consecutive year. Seventy geese were rocket-netted or nest-trapped, and an additional 1450 were banded during drive trapping. Nesting success was average and gosling survival was good resulting in fall flight numbers similar to previous years.

In cooperation with the City of Winnipeg and the Department of Highways, roadside reflectors were installed along roadways to reduce deer-vehicle accidents. Preliminary results indicate a substantial decrease in the number of collisions, both in rural areas and within Winnipeg.

In a program for humane trap development, three trap inventors and 17 trappers field tested 228 traps during the 1982 fur season. In addition, eight different models of traps were pen tested. Although few of the traps are currently on the market, those which perform according to accepted criteria will be endorsed and made available to trappers.

Aerial surveys were undertaken to determine the age and sex structure of moose herds in areas east of Lake Winnipeg, the northern Interlake, the Duck Mountain region and areas near The Pas.

During 1982/83, 15 scientific permits were issued for independent studies of ptarmigan, white pelicans, burrowing owls, red-sided garter snakes, timber wolves, muskrats, beaver, woodland caribou, northern prairie skinks, white tailed deer, red squirrels and western hognose snakes. In addition, the Wildlife Branch supported studies at the University of Manitoba on "Brood Survival of the White Pelican," "Behavior and Dispersal of Beaver," "The Effects of Forest Fire on Woodland Caribou" and the "Assessment of the Impact of ATV Use on the Cape Churchill Wildlife Management Area."

Big Game Management

A) White-tailed Deer

The mild winter of 1981/82 resulted in an excellent carry-over of deer and good production of fawns in the spring of 1982. The 1982 fall hunting season attracted 44,700 firearm deer hunters for a success rate of 58%. About 15% of the 1785 licensed bow-hunters bagged a deer and 11% of the 103 muzzle loading firearm hunters took an animal.

A search for winter-killed deer was conducted in the spring of 1983 on a section of Crown land located southwest of Virden. The search involved volunteers from Brandon and Virden along with regional staff. The area had carried about a hundred deer through the winter. The search revealed that up to 10% of these deer, primarily small fawns, succumbed during the winter. In most cases, death was probably due to an ice storm in March.

Staff retrieved and conducted autopsies on 102 deer killed by vehicles and trains in southwestern Manitoba during the winter of 1982/83. Data on the physical condition, age, weight, pregnancy rates, number and size of fetuses and other biological information were recorded to monitor the general well-being of the deer. Autopsies showed deer to be in generally good condition. Post-natal mortality in newborn fawns is expected to be minimal in 1983.

B) Moose

Manitoba's moose population remained low as compared to numbers recorded in the late 1960's and early 1970's. Because of depressed populations, general hunting seasons in the southern portion of the province were subject to a bag restriction of bulls only. In areas where demand for moose hunting opportunity exceeded supply, hunting licences were allocated by special draw.

Calf survival is a critical factor in the maintenance of a healthy moose population. Due to unknown factors mortality rates were high in some portions of the province, while in others, survival rates were among the highest of any reported in North America.

C) Elk

Elk hunting once again grew in popularity with licence applications far exceeding the number of available licences. Because of this, elk licences were once again issued through a draw on a two licence-one tag system, except along the periphery of Riding Mountain National Park. Licence sales for Game Hunting Area 30 in the Spruce Woods area increased from 100 to 200 and in the Riding Mountain area from 1200 to 1600. Landowner elk seasons continued to grow in popularity. A landowner elk hunting season was instituted along the periphery of the Duck Mountain Provincial Park.

D) Woodland Caribou

Woodland caribou populations, although they have not been analytically surveyed, appear to be remaining relatively stable. Hunting licenses were again sold through a special draw as well as over the counter. Hunting season dates remained unchanged from previous years in all areas.

Hunting Licences Sold, 1982/83

	Fee	Number Sold	Revenue
Game Bird			
Resident of Manitoba	$ 5.00	43,689	$ 197,502
Non-Resident (Canadian)	35.00	1,338	46,253
Non-Resident (Alien)	60.00	6,287	374,388
Wild Turkey			
Resident of Manitoba	10.00	304	3,040
Moose			
Resident of Manitoba	16.00	9,237	144,572
Non-Resident (Canadian)	60.00	29	1,740
Non-Resident (Alien)	150.00	220	33,000
Elk			
Resident of Manitoba	25.00	3,761	94,025
Woodland Caribou			
Resident of Manitoba	25.00	303	7,575
Black Bear			
Resident of Manitoba	10.00	3,445	33,191
Non-Resident (Canadian)	50.00	26	1,300
Non-Resident (Alien)	100.00	316	31,581
Deer			
Resident of Manitoba	15.00	48,812	708,947
Non-Resident (Canadian)	80.00	286	22,880
Non-Resident (Alien)	100.00	24	2,400
Total Licence Sales			
Resident of Manitoba		109,551	1,188,852
Non-Canadian (Canadian)		1,679	72,173
Non-Resident (Alien)		6,847	441,369
Total		118,077	1,702,394
Big Game Replacement	variable	252	763
Wildlife Certificates	3.00	81,225	206,369
		199,554	1,909,526

Hunting Licence Sales and Revenue, 1973/74 to 1982/83

	Game Bird and Wild Turkey		Big Game and Black Bear		Wildlife Certificates		Total Licences & Certificates	
Year	Licences Sold	Revenue	Licences Sold	Revenue	Licences Sold	Revenue	Licences Sold	Revenue
1973/74	48,249	$184,236.25	55,621	$ 632,166.50	71,766	$144,599.00	175,646	$ 961,001.75
1974/75	48,212	156,109.25	11,627	191,346.50	48,605	99,980.25	108,444	447,436.00
1975/76	48,687	281,261.50	11,606	190,692.00	53,998	109,647.25	114,291	581,600.75
1976/77	56,581	367,888.50	13,231	237,423.25	61,494	124,387.25	131,306	729,690.00
1977/78	56,567[1]	379,400.75	52,381	554,025.50	77,862	157,485.00	186,810	1,090,911.25
1978/79	60,061[1]	402,525.75	55,822	596,778.75	82,267	165,835.25	198,150	1,165,139.75
1979/80	59,783[1]	440,639.25	48,250	539,079.50	77,855	157,039.00	185,888	1,136,757.75
1980/81	58,091[1]	460,939.75	60,505	666,291.25	83,022	167,673.00	201,618	1,294,904.00
1981/82	56,203[1]	474,355.50	66,570	713,353.25	83,998	169,719.00	206,771	1,357,427.75
1982/83	51,618	621,183.00	66,711	1,081,211.50	81,225	207,131.50	199,554	1,909,526.00

*Subject to reconciliation and audit.
[1]Includes wild turkey licences.

E) Black Bear and Timber Wolves

Black bear and timber wolf populations remained high, and hunting seasons remained unchanged for 1982. Any person holding a resident big game license between August, 1982 and March, 1983 was entitled to harvest timber wolves for that season.

Game Bird Management

Upland game bird populations declined considerably in 1982. Bag limits and season dates remained unchanged, but the number of birds harvested declined substantially. Wild turkey hunting continued to be popular in 1982. Four-hundred hunters took part in the wild turkey seasons in the La Riviere and St. Malo managed turkey hunting areas. Hunter success at La Riviere was 27% and 22% at St. Malo.

Approximately 51,300 hunters took part in the waterfowl and upland game bird seasons during 1982. This represents an increase of approximately 4000 hunters over the previous year.

Northern Wildlife Management

The Beverly-Kaminuriak Barren Ground Caribou Management Agreement was formally signed in Winnipeg on June 3, 1982 by the Minister of Indian Affairs, the Minister of the Environment (Canada), the Minister of Natural Resources (Northwest Territories), the Minister of Northern Saskatchewan (Saskatchewan) and the Minister of Natural Resources (Manitoba). The signing ceremony was attended by several representatives of "user" communities who endorsed the agreement by witnessing the signatures of the ministers. The agreement formally established the Beverly and Kaminuriak Caribou Management Board, which has eight native and five government members. The Board met on several occasions during the past year to address ways and means of improving the status of these caribou herds.

The polar bear holding facility, located in a triple quonset hut in Fort Churchill was put into operation for the 1982 polar bear season. The concept of the facility is simple; problem bears will be detained until ice forms on Hudson Bay, at which time they are released onto the ice and leave the area on their own. The facility contains 20 cement block cages with barred steel doors. Four of these cages are large enough to accommodate family groups of polar bears. Polar bears caused an estimated $600 in property damage in 1982/83, down significantly from the previous year's estimate of $2400.

Staff maintained a high level of commitment to the Wildlife Advisory and Planning Board under the Northern Flood Agreement. Regular communication and joint projects were established with the communities of Cross Lake, Nelson House, Norway House, Split Lake and York Landing through meetings and visits to the communities.

Detailed moose habitat maps were prepared from Landsat imagery for use in monitoring moose populations throughout the Northern Flood agreement area.

Wildlife Damage Control

A) Predator Control

Department staff continued to work with landowners in reducing predator-caused damage. In most cases, responsibility for damage prevention rests with the landowners, with department staff offering assistance in the form of traps, snares and other control devices. In 1982/83 staff responded to 129 wolf, 74 coyote and 36 fox damage complaints.

B) Black Bear Damage Control

In 1982/83, 87 claims for compensation for bear damage to beehives were processed for a total compensation expenditure of $44,525.12.

Staff from the Department of Agriculture and the Department of Natural Resources continued to promote the use of bear-proof electric fences as a preventative measure.

C) Problem Beaver Control

The Department assists citizens in controlling beaver damage to roads, crops and buildings by removing dams and problem beavers. Beaver damage complaints across the province totalled 925 in 1982/83.

An intensive beaver control program around Riding Mountain National Park continued in 1982/83. The three-year program, instituted in 1981, is cost-shared between the Department of Natural Resources and Parks Canada. Under the program, the Department responds to all beaver damage complaints within the special control area. In 1982, $26,534 was spent in responding to 166 complaints in the area.

D) Big Game Damage Control

The Department continued to assist farmers in preventing deer, elk and moose damage to farm produce by using scaring devices and repellents. Portable deer feeders containing special pelletized deer/elk rations were used to intercept and feed deer which travel daily from wooded areas to feed on haystacks. Two

Manitoba farmers were provided with materials to construct deer/elk proof fences around their haystack yards.

In 1982/83 the Department responded to 156 deer, 45 elk and 28 moose complaints. The Department processed 91 big game damage compensation claims and paid $108,248.61 in compensation.

E) **Waterfowl Damage Control**

Through the Waterfowl Crop Damage Prevention Program, Department staff and seasonal employees assisted farmers in protecting private crops from damage caused by ducks, geese and sandhill cranes. Materials to build scarecrows were provided and noise-making devices such as propane bangers and cracker shells were deployed as necessary.

Lure crops of barley were planted on Crown land at Oak Hammock Marsh (245 hectares), Grants Lake (41 hectares), Delta Marsh (57 hectares) and Pleasant Valley (18 hectares). Privately owned barley crops were purchased at Big Grass Marsh (28 hectares) and in the Pasquia area (121 hectares) and set aside as lure crops.

Scaring activities, equipment purchases and related expenses totalled $155,891. Crown land lure crop preparation cost $46,770 while the purchase of private land lure crops totalled $39,828. The total program cost of $242,489 was shared between Manitoba and Canada under the provisions of the Canada/Manitoba Waterfowl Crop Damage Prevention Agreement.

The Waterfowl Crop Damage Compensation Program complements the Waterfowl Damage Prevention Program and is intended to reduce financial losses suffered by farmers when waterfowl crop damage occurs. In 1982/83, 127 claims were processed for a total of $214,365 of which $163,922 was cost-chared between Canada and Manitoba under the provisions of the 1982/83 Waterfowl Crop Damage Compensation Program Agreement.

Lands Branch

Lands Branch

Responsibilities:

Administers Crown land in Manitoba under The Crown Lands Act; maintains a Crown lands register; negotiates outstanding treaty claims and land settlements with Indian bands and the Canada Department of Indian and Northern Affairs; administers the allocation of wild rice leases on Crown land.

Temporary Dispositions

The Lands Branch dealt with numerous requests from individuals and groups wishing to use Crown land for purposes such as primary residences, recreational cottages, gardens, commercial facilities, etc. The Branch also administered vacation home lots in provincial parks. Where possible, 21-year leases were encouraged for security of tenure, but, since it is a requirement that land be legally surveyed prior to lease, many allocations of land are made by means of annual permits.

Leases and Permits and Revenue, 1982/83

Item	Number	Amount
Vacation home leases and permits	6,425	$1,179,000
Miscellaneous leases	350	50,305
Crown land permits	1,450	54,265
Garden lot permits	325	6,400
Wild rice leases	237	35,082
Totals	8,787	$1,325,052

In 1983, remote cottaging guidelines were established which enabled the Branch to respond in a more positive manner to applications for remote cottage sites, received on a first-come, first-served basis. Designated remote cottaging lakes are being systematically identified throughout Manitoba to enable immediate processing of applications on these lakes, and to provide positive land use planning of remote lakes through a method of "zoning."

Municipal governments and the Department of Northern Affairs, on behalf of local communities, request Crown land for community buildings, garbage disposal sites and other community purposes. Such requests are accommodated by reservation of the required lands in the Crown land registers. Lands required by other branches of this Department, and by other departments such as the Department of Highways and Transportation are also reserved pending permanent disposition.

Permanent Dispositions

Permanent dispositions of Crown land are made by way of sales, exchanges or designation by Order-in-Council. In 1982/83, 89 such orders were approved, covering dispositions of some 352 parcels of land.

There were 160 long-term agreements remaining in effect from 1967 and prior years. In 1982/83, 32 agreements were paid out and land transferred, leaving 128 agreements in effect. Capital and interest payments on these accounts totalled $54,673 in 1982/83.

As part of an on-going service, 25 conveyances of mines and minerals for consolidation with surface rights were conducted to permit registration of plans of subdivision.

Transfers of land were also made to Public Works Canada for federal programs servicing the province (e.g. wharves, RCMP sites, airports) and to northern cities and towns for townsite expansion.

Sales of Crown land to eligible applicants continued during most of 1982 in accordance with previously approved policy. New applications to purchase were deferred after December 9, 1981 pending a detailed policy review, but processing of sales in progress as of that date continued. New policy regarding sales of land for agricultural and non-agricultural purposes is now in effect.

Transfers or Grants Issued under the Land Sales Program and Revenue, 1982/83

Agricultural sales	136	$1,528,027
Recreational/commercial	43	105,465
Primary residence	158	135,558
Totals	337	$1,769,050

Indian Land Claims

All Indian land claims received were reviewed by the Interdepartmental Indian Land Claims Working Group in accordance with established policy guidelines.

Twenty Indian bands have validated treaty land entitlement claims. Another seven are under review by Canada. To enable Canada to partially fulfill its treaty land entitlement obligations with the Fox Lake Band, 39.54 hectares of land were transferred at Bird. Cabinet gave Approval-in-Principle for the survey and transfer of approximately 890 hectares at York Landing for the York Factory Band. The Mathias Colomb Band has requested approximately 2023 hectares of land at Hughes Lake. As a result of the report of "The Treaty Land Entitlement Commission," negotiations are underway with representatives of the Entitlement Bands and Canada toward reaching a written agreement for the settlement of outstanding treaty land entitlement in the province.

Flood claim settlements are being negotiated between the affected bands and the Province and/or Manitoba Hydro. The areas concerned include lands referred to under the Fairford River System (Lake St. Martin), the Grand Rapids Forebay and the Northern Flood Agreements. Statements of Claim have been filed against the Province by the Grand Rapids Forebay and Northern Flood Committee bands. The Northern Flood Committee is composed of the five bands affected by the Northern Flood Agreement, these being Cross Lake, Nelson House, Norway House, Split Lake and York Factory. Under Article 4 of the Agreement, the Nelson House Band has a hold area from which to select lands. A joint hold area of approximately 4250 hectares was approved for the Cross Lake and Norway House Indian Bands at Whiskey Jack Portage. Several land exchange requests made by these bands under the provisions of Article 3 of the Agreement are under consideration by the Province. Cabinet Approval-in-Principle was given for the survey and transfer of approximately 4450 hectares of land at Denbeigh Point to complete a land exchange commitment made with the Chemawawin Band under the Grand Rapids Forebay Agreement.

Land exchange negotiations for the airstrip built on the Bloodvein Indian Reserve are ongoing. The transfer of lands at Sea River Falls to complete a land exchange for the airstrip and roads built on the Norway House Indian Reserve is in the final stages. Cabinet Approval-in-Principle was given for the survey and transfer of approximately 121 hectares of land at Gods River as part of a land exchange request by the Gods River Indian Band.

Discussions are continuing with representatives of The Pas Band and the Federal Government concerning land exchanges involving dykes and road rights-of-way on reserve lands.

Appraisal Program

The continuing program of appraising all Crown land for sale, lease or exchange during 1982/83 involved over 850 completed appraisals. The sale of agricultural Crown land required 80 appraisals while the land exchange program with local government districts and municipalities accounted for 658 appraisals. Sales/leases of residential and commercial sites required another 30 appraisals. The balance of the appraisals were mainly for sale/lease of recreational lots throughout the province.

Wild Rice Program

A new Wild Rice Section was established within the Lands Branch to provide more administrative support for the Wild Rice Program. The Section is structured to provide program administration, technical support and extension services. The Wild Rice Program continued with an interim program for the 1982 season, in preparation for new legislation expected in 1983. Leases expiring in 1981 were renewed for one year and new applications are being held, pending legislation.

A new company, Indian Wild Rice Producers Association of Manitoba, carried out the 1982 Whiteshell harvest in cooperation with the Department of Natural Resources. Individual Bands continued to hold the 20 leases in the Nopiming Area, formerly held by Man-Omin-Ekay.

A harvest of 188,208 kilograms of green wild rice was recorded with an average lake-side price of $2.45 per kilogram. Royalty was waived for the 1982 harvest on 237 leases. Revenue was held at the 25 dollar per lease fee, plus 30 harvest permits, totalling $6675.

The Wild Rice Section now has 122 applications on file for new areas in the Northwestern Region. A strong interest has developed with good success in the Flin Flon area. Applications have been received for areas near Swan River and Dauphin, a new area developing an interest in wild rice.

An experimental wild rice seeding program was carried out during September and October of 1982, with objectives to provide more wild rice picking opportunities for remote communities in the Natural Area of the province and to test seed lakes in new areas of the province. A total of 5456 kilograms of wild rice was seeded in 61 separate sites.

Crown Land Registry

In 1982/83, 18,500 entries were made to the Crown Land Registry. There were 11,000 land searches conducted by internal staff in response to requests. In addition, the registry was consulted daily by other government personnel, the public and internal staff for land administration.

Progress continued towards transfer of Registry records from manual registers to the automated computer system. Approximately 35% of data had been entered. Subsystems included automated issuance of invoices and permits and related accounting. The Lands Branch has six visual display terminals for data retrieval in head office and one in Thompson. The latter provides instant access to records until now available only in head office through search of manual records. In 1982/83, there were approximately 20,000 terminal inquiries made per month, totalling about 240,000 for the year.

Local Government District Land Transfer Program

Local Government District lands administered in trust by the Province have continued to be returned, sold to lessees or exchanged for unencumbered Provincial land. The program has been well received by the 10 districts involved, and by local farmers.

A total of six land exchanges were completed, with six major exchanges still pending. Ten further exchanges have yet to be negotiated.

Transfers and Exchange under the L.G.D. Land Transfer Program 1982/83

Transferred directly to L.G.D.'s	— 25 parcels	
Transferred to purchasers	— 33 parcels	$172,727
Crown land transferred to L.G.D.'s	— 116 parcels	705,590
L.G.D. land acquired by the Crown	— 121 parcels	703,480
Totals	— 295 parcels	$1,581,797

Surveys and Mapping Branch

Surveys and Mapping Branch

Responsibilities:

Administers The Surveys Act (Part II); provides legal land descriptions for disposition under The Crown Lands Act and The Mines Act; prepares Orders of the Minister for approval of municipal by-laws; maintains all provincial geographic names; conducts land surveys as required by government agencies; implements and maintains a provincial system of control surveys and compiles topographical mapping; compiles and prints maps and plans; maintains a map distribution system, air photo library and remote sensing centre.

Administration

The Branch continued to provide legal land description services for all Crown land transactions for purposes of plans of subdivision, land or mineral exchange, municipal closing by-laws, the Agricultural Crown Land Sales Program, and for permits and leases under The Crown Lands Act, The Mines Act and the Consents and Orders of the Minister.

The Toponymy Unit provided liaison and consultative services to government and the public regarding the history and official methods of registering Manitoba placenames by making presentations to interested groups, and the printing of two supplements to the *Gazetteer of Canada-Manitoba*, 1981. The Unit prepared 31 additional supplementary name location maps, checked and provided name data for 106 mapping manuscripts, researched and prepared data for 99 name decisions and issued 17 original and 41 duplicate Commemorative Name Certificates.

The staff also contributed to the seminar on the production, content and future of gazetteers in Canada.

Legal Surveys

A decrease in legal survey requests from Water Resources, Parks Branch and Northern Affairs was offset by increases from Crown Lands, Northern Flood Agreement surveys and retracement surveys. The number of plans deposited for approval under the Crown Lands Act remained fairly constant.

Retracement surveys, including the integrated survey program, have made appreciable inroads towards this preservation of the survey framework in the agricultural area of the province.

Much progress was made on the survey projects related to the Crown Land Sales Program, especially on the survey of cottage lots.

One hundred and six Plans of Survey affecting Crown lands were examined for the approval of the Director of Surveys. Field work was completed for 81 survey projects. Surveys in excess of the annual production of the Branch's staff were contracted to private surveyors.

Control Surveys and Topographic Mapping

Staff continued to promote the concept of developing a multi-purpose land information network for Manitoba through their participation on a committee established by the Interdepartmental Planning Board.

A Provincial Survey System Committee, comprised of representatives from government and industry, was established by the Branch to study and make recommendations for the establishment of a fully integrated provincial referencing system that would support a multi-purpose land information network.

Interim specifications for use by government and private surveyors in surveying townships under The Special Surveys Act were revised.

Specifications were developed for use by government and private surveyors in integrating the geodetic reference framework with the land survey system.

Two hundred survey stations were prepared in the Interlake and Southwestern regions of Manitoba for the future (1983/84) expansion of the Provincial Survey System.

The Special Survey of Township 8, Range 20 W.P.M. was also completed.

Technical support for base mapping activities under the Canada/Manitoba Flood Damage Reduction Program continued with reconnaissance work being carried out in Virden and The Pas.

Medium scale 1:20,000 mapping also continued, with 139 pencil manuscripts being compiled, of which 10 were draughted and released to Map Sales.

The Computations and Data Unit continued with their program of establishing a computerized positional data file for the Province. A VAX 11/750 mini-computer was installed to assist in this work.

Geographic Mapping

(Previous year's total production in parenthesis.)

The section provided new maps and plans for various public and departmental purposes, including resource use, recreation, land disposition and legal surveys. Routine annual revisions were also completed for several existing maps and publications.

A major project was the preparation of the *Manitoba Atlas* for which the Cartography Unit prepared 195 full-color maps. The printing and binding of the Atlas was under contract, with specifications and quality control provided by the Branch. It also provided maps for various other purposes, including Manitoba Telephone Mobile Communications, French Language Services in Manitoba and Fire Control Regions of Canada, for a total of 214 (279) single or full color mapping projects.

The Photomechanical Unit was responsible for providing routine and custom photomechanical services for this department and other government agencies. This included copies and enlargements of aerial photos, township mosaics, base or special mapping projects and the preparation of rectified photo mosaics. The Unit also prepared all intermediate negatives, color proofs and final printing negatives for the *Manitoba Atlas.*

The Drafting Unit prepared a total of 66 (152) plans of legal surveys and described boundaries. Other projects included the preparation of new and revised plans for fisheries regulated areas, 6 (12) certified townships for wildlife enforcement and the endorsement of revisions or supplementary data on 265 (176) legal plans.

Map Distribution and Remote Sensing

The Map Sales and Air Photo Library continued with a public awareness program by participating in promotional exhibits, advertising in newspapers and making presentations to special interest groups. Service was provided to approximately 15,000 customers. Revenue increased by 38% in 1982/83, from $125,700 in 1981/82 to $173,200. Map sales outlets were established with dealers in 35 locations throughout the Province, including the regional offices in Brandon, Dauphin, The Pas, Thompson, Swan River and Portage la Prairie. Maps are available in over 40 outlets to service customers.

During the 1982 flying season there were 25,523 line kilometres of aerial photography flown by various agencies. A print of each of these air photographs has been placed in the Air Photo Library for general use. They were also microfilmed and incorporated into the air photo search system.

The Air Photo Library has reached the stage of development where a complete information search centre can be established external from the central library. The components are a 35 mm aperture card deck of all flight indices, the 16 mm retrieval system for each photograph and the equipment for using the data. This centre would provide search information on the aerial photography coverage for the entire Province. Available photography ranges from 1923 to current coverage.

The Remote Sensing Centre became involved with a Technology Enhancement Program in cooperation with the Canada Centre for Remote Sensing, Department of Energy, Mines and Resources. The purpose of the program is to test developed remote sensing techniques for natural resources management. The primary data source is Landsat which requires specialized equipment to do image analysis work. This equipment has been loaned by the Canada Centre for Remote Sensing to carry out the program. Eight projects are underway in close liaison with resource management specialists.

Approximately 1800 line kilometres of supplementary aerial photography were flown by the Centre's 70 mm camera system. The main users of the service were branches of the Department of Natural Resources, being Water Resources Forestry, Wildlife and Parks, and also departments of Energy & Mines, Municipal Affairs and Agriculture.